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A WORKING PROGRAM AGAINST INFLUENZA.

PREPARED BY AN EDITORIAL COMMITTEE OF THE
AMERICAN PUBLIC HEALTH ASSOCIATION

*And Based upon Papers, Committee Reports and Discussions Presented at the Meeting of the Association Held in Chicago, Illinois, December 9 to 12, 1918.**

FOREWORD.

SOMETHING is known concerning the nature of influenza. Much remains to be determined. Administrative health agencies, however, must act in the light of present knowledge. They cannot wait until the last word has been said in respect to the identity and nature of the microorganism or virus that causes the disease, or in respect to the channels through which it may be spread, or for the discovery of specific vaccines or sera for prevention or cure.

To afford such aid as may be possible to administrative health officials and to others concerned in the protection of the public health, a committee of the American Public Health Association was charged with the duty of preparing a provisional working formula, based upon the facts and opinions elicited at the meeting of the Association in Chicago, December 9 to 12, 1918.

This pamphlet is the result of deliberations of that committee. It is issued by the Association in the discharge of the duty to the public that the Association has assumed in the hope that it may prove helpful.

INTRODUCTORY STATEMENT.

The present epidemic is the result of a disease of extreme communicability. So far as information available to the committee shows, the disease is limited to human beings.

The microorganism or virus primarily responsible for this disease has not yet been identified. There is, however, no reason whatsoever for doubting that such an agency is responsible for it. Mental conditions may cause one to believe he has influenza when he has not, and may make the patient who has the disease suffer more severely than he otherwise would. No mental state alone, however, will cause the disease in one who is not infected by the organism or virus that underlies the malady.

While the prevailing disease is generally known as influenza, and while it will be so referred to in this statement, it has not yet been satisfactorily established that it is the identical disease heretofore known by that name, nor has it been definitely established that all preceding outbreaks of disease styled at the time "influenza" have been outbreaks of one and the same malady.

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There is no known laboratory method by which an attack of influenza can be differentiated from an ordinary cold or bronchitis or other inflammation of the mucous membranes of the nose, pharynx, or throat.

There is no known laboratory method by which it can be determined when a person who has suffered from influenza ceases to be capable of transmitting the disease to others.

Laboratories are necessary agencies for the supervision and ultimate control of the disease. The research laboratory is necessary for the discovery of the causative microorganism or virus, and for the discovery of some practicable method for the propagation of a specific vaccine and a curative serum. Clinical laboratories are necessary for the supervision and control of such vaccines and sera as may be used from time to time for the prevention of the disease and for therapeutic purposes, and for the information such laboratories can give to health officers and physicians as to such variations in the types of infective microorganisms, as occur during the progress of an epidemic.

Deaths resulting from influenza are commonly due to pneumonias resulting from an invasion of the lungs by one or more forms of streptococci, or by one or more forms of pneumococci, or by the so-called influenza bacillus, or bacillus of Pfeiffer. This invasion is apparently secondary to the initial attack.

Evidence seems conclusive that the infective microorganism or virus of influenza is given off from the nose and mouth of infected persons. It seems equally conclusive that it is taken in through the mouth or nose of the person who contracts the disease, and in no other way, except as a bare possibility through the eyes, by way of the conjunctivæ or tear ducts.

PREVENTION.

If it be admitted that influenza is spread solely through discharges from the noses and throats of infected persons finding their way into the noses and throats of other persons susceptible to the disease, then no matter what the causative organism or virus may ultimately be determined to be, preventive action logically follows the principles named below and, therefore, it is not necessary to wait for the discovery of the specific microorganism or virus before taking such action.

I. Break the channels of communication by which the infective agent passes from one person to another.

II. Render persons exposed to infection immune, or at least more resistant, by the use of vaccines.

III. Increase the natural resistance of persons exposed to the disease, by augmented healthfulness.

I. Breaking the channels of communication.

(a) By preventing droplet infection. The evidence offered indicates that this is of prime importance.

(b) By sputum control. The evidence offered indicates that the danger here is due chiefly to contamination of the hands and common eating and drinking utensils.

(c) By supervision of food and drink. Evidence offered does not indicate much danger of infection through these channels.

Details and practical methods possible for the limitation of infection through droplets, sputum, and food and drink are discussed later under special preventive methods.

II. Immunization and vaccines.

(See the report of the laboratory committee appended.)

In the present epidemic vaccines have been used to accomplish:

1. The prevention or mitigation of influenza *per se*.
2. The prevention or mitigation of complications recognized as due to the influenza bacillus or to various strains of streptococci and pneumococci.

In relation to the use of vaccines for the prevention of influenza, the evidence which has come to the attention of the committee as to the success or lack of success of the practice is contradictory and irreconcilable. In view of the fact that the causative organism is unknown, there is no scientific basis for the use of any particular vaccine against the primary disease. If used, any vaccine must be employed on the chance that it bears a relation to the unknown organism causing the disease.

The use of vaccines for the complicating infections rests on more logical grounds, and yet the committee has not sufficient evidence to indicate that they can be used with any confident assurance of success. In the use of these vaccines the patient should realize that the practice is still in a developmental stage.

The committee believes that when vaccines are used experimentally for the purpose of determining their preventive or curative value, the following conditions should be complied with:

1. The groups of vaccinated and unvaccinated persons should be the same in number.
2. The relative susceptibilities of the two groups should be equal, as measured by age and sex distribution, previous exposures to infection without development of influenza and a previous history as to recent attacks of the disease.

3. The degree of exposure in each group should be practically the same in duration and intensity.

4. The groups should be exposed concurrently during the same stage of the epidemic curve.

III. Increased natural resistance of persons exposed to infection.

Physical and nervous exhaustion should be avoided by paying due regard to rest, exercise, physical and mental labor and hours of sleep. The evidence is conclusive, however, that youth and bodily vigor do not guarantee immunity to the disease.

The nature of the preventive measures practicable and necessary in any given community depends in a large part upon the nature of the community itself, as to population characteristics, industries, and so on, and upon the stage and type of the epidemic curve. For example, the measures to be adopted in a purely rural community would not be practicable or desirable in a large metropolitan area, nor would the measures desirable and feasible at the beginning or end of an epidemic be found those best adapted for the intervening period. The committee has found it impossible, therefore, to lay down any rules for the guidance of all health officials alike in preventive measures. The most it has been able to do has been to state certain general principles that in its judgment should underlie administrative measures for the prevention of influenza. The application of these principles to the needs of any particular community must be left for determination by the officers of that community who are responsible for the protection of its public health.

The preventive measures recommended by the committee are as follows:

A. Efficient organization to meet the emergency, providing for a centralized coördination and control of all resources.

B. Machinery for ascertaining all facts regarding the epidemic:

1. Compulsory reporting.
2. A lay or professional canvass for cases, etc.

C. Widespread publicity and education with respect to respiratory hygiene, covering such facts as the dangers from coughing, sneezing, spitting, and the careless disposal of nasal discharges; the advisability of keeping the fingers and foreign bodies out of the mouth and nose; the necessity of handwashing before eating; the dangers from exchanging handkerchiefs; and the advantages of fresh air and general hygiene. Warnings should be given regarding the danger of the common cold, and possibly colds should be made reportable so as to permit the sending of follow-up literature to persons suffering from them. The public should be made acquainted with the danger of possible carriers among both the sick and the well and the resultant necessity for the exercise of unusual care on the part of everybody with respect to the dangers of mouth and nasal discharges.

D. Administrative procedures:

1. There should be laws against the use of common cups, and improperly washed glasses at soda fountains and other public drinking places, which laws should be enforced.

2. There should be proper ventilation laws, which laws should be enforced.

Since the disease is probably largely a group or crowd problem, the three following sub-heads are especially important.

3. *Closing.*—Since the spread of influenza is recognized as due to the transmission of mouth and nasal discharges from persons infected with influenza, some of whom may be aware of their condition but others unaware of it, to the mouths and noses of other persons, gatherings of

all kinds must be looked upon as potential agencies for the transmission of the disease. The limitation of gatherings with respect to size and frequency, and the regulation of the conditions under which they may be held must be regarded, therefore, as an essential administrative procedure.

Non-essential gatherings should be prohibited. Necessary gatherings should be held under such conditions as will insure the greatest possible amount of floor space to each individual present, and a maximum of fresh air, and precautions should be taken to prevent unguarded sneezing, coughing, cheering, etc.

Where the necessary activities of the population, such as the performance of daily work and earning of a living, compel considerable crowding and contact, but little is gained by closing certain types of meeting places. If, on the other hand, the community can function without much of contact between individual members thereof, relatively much is gained by closing or preventing assemblages.

Schools: As to the closing of schools there are many questions to be considered.

- (a) Theoretically, schools increase the number and degree of contacts between children. If the schools are closed, many of the contacts which the children will make are likely to be out of doors. Whether or not closing will decrease or increase contacts must be determined locally. Obviously, rural and urban conditions differ radically in this regard.

- (b) Are the children in coming to and going from school exposed to inclement weather or long rides in overcrowded cars?

- (c) Is there an adequate nursing and inspection system in the schools?

- (d) Is it likely that teachers, physicians and nurses can really identify and

segregate the infected school child before it has an opportunity to make a number of contacts in halls, yards, rooms, etc.? We suggest that children suspected of having influenza and held in school buildings for inspection should be provided with and required to wear face masks.

(e) Will the closing of schools release personnel or facilities to aid in fighting the epidemic?

(f) If schools are kept open, will the absence of many teachers lower the educational standards?

(g) If a number of pupils stay at home because of illness or fear, will they not constitute a heavy drag upon their classes when they return?

(h) If schools are closed, is there likely to be an outbreak in any case when they are reopened?

Churches: If churches are to remain open, services should be reduced to the lowest number consistent with the adequate discharge of necessary religious offices, and such services as are held should be conducted in such a way as to reduce to a minimum, intimacy and frequency of personal contact.

Theatres: As regards theatres, movies, and meetings for amusement in general, it seems unwise to rely solely or in great part upon the ejection of careless coughers. In the first place it is difficult to determine who is a careless cougher, and after each cough, danger has already resulted. It seems, too, that the closing of theatres may have as much educational value as their use for direct educational purposes, etc. Discrimination as to closing among theatres, movies etc., on the basis of efficiency of ventilation and general sanitation, may be feasible.

Saloons, etc.: The closing of saloons and other drinking places should be decided upon the basis of the probability of

spread of the disease through drinking utensils and the conditions of crowding.

Dance halls, etc.: The closing of dance halls, bowling rooms, billiard parlors and slot-machine parlors, etc., should be made effective in all cases where their operation causes considerable personal contact and crowding.

Street cars, etc.: Ventilation and cleanliness should be insisted upon in all transportation facilities. Overcrowding should be discouraged. A staggering of opening and closing hours in stores and factories to prevent overcrowding of transportation facilities may be cautiously experimented with. In small communities where it is feasible for persons to walk to their work it is better to discontinue the service of local transportation facilities.

Funerals: Public funerals and accessory funeral functions should be prohibited, being unnecessary assemblies in limited quarters, increasing contacts and possible sources of infection.

4. Masks.—The wearing of proper masks in a proper manner should be made compulsory in hospitals and for all who are directly exposed to infection. It should be made compulsory for barbers, dentists, etc. The evidence before the committee as to beneficial results consequent upon the enforced wearing of masks by the entire population at all times was contradictory, and it has not encouraged the committee to suggest the general adoption of the practice. Persons who desire to wear masks, however, in their own interests, should be instructed as to how to make and wear proper masks, and encouraged to do so.

5. Isolation.—The isolation of patients suffering from influenza should be practiced. In cases of unreasonable carelessness, it should be legally enforced most rigidly.

6. *Placarding*.—In cases of unreasonable carelessness and disregard of the public interests placarding should be enforced.

7. *Hospitalization*.—The theory of complete hospitalization is that, if all the sick were hospitalized the disease would be controlled. In certain somewhat small communities where hospitalization of all cases was promptly inaugurated the disease did come quickly under control. It must be recognized, however, that unless every infective person can be detected and identified as such and removed to the hospital before he has infected others, hospitalization cannot be depended upon to eliminate the disease.

In general, home treatment is to be advocated where medical, nursing and other necessary facilities are adequate, and where home treatment is not directly contra-indicated by the danger of infecting others. The hospitalization in any case, mild or severe, should be undertaken only when facilities for home treatment are inadequate with respect to medical and nursing care or otherwise. The objection to routine hospitalization of mild cases lies in the fact that patients not already suffering from secondary infections may acquire them by exposure to hospital cases already so infected. The objection to the routine hospitalization of severe cases lies in the danger to the patient necessarily incident in the transfer from home to the hospital.

8. *Coughing and Sneezing*.—Laws regulating coughing and sneezing seem to be desirable for educational and practical results.

9. *Terminal Disinfection*.—Terminal disinfection for influenza has no advantage over cleaning, sunning and airing.

10. *Alcohol*.—The use of alcohol serves no preventive purpose.

11. *Sprays and Gargles*.—Sprays and gargles do not protect the nose and throat from infection, for the following reasons:

(a) So far as the knowledge of the committee extends, no germicide strong enough to destroy infective organisms can be applied to the nose and throat without at the same time injuring the mucous membranes.

(b) Irrigation of the nose and throat to accomplish the complete mechanical removal of the infective organism is impracticable.

(c) Their use tends to remove the protective mucus, to spread the infection and to increase the liability of actual entrance of the infective organisms.

(d) Their domestic use is liable to lead in families to a common employment of the same utensils.

(e) The futility of sprays and gargles has been demonstrated with respect to certain known organisms such as the diphtheria bacillus and the meningococcus.

MISCELLANEOUS CONSIDERATIONS.

1. Colleges, asylums and similar establishments may with advantage enforce rigid institutional quarantine against the outside world, if they begin in the early stage of an epidemic, provided they are so located and conducted as to render the procedure reasonably likely to be effective, even temporarily; for even temporary success will postpone the appearance of the disease, if it appears at all, to a time when the patients will be more likely to be able to have adequate medical and nursing care.

2. The recommended measures for control, even if they do not accomplish the desired end, should at least be instrumental in distributing the epidemic over a

longer period of time, which in itself is highly desirable.

3. The statistics of the disease and the keeping of proper records are extremely important. The lack of knowledge regarding innumerable factors in reference to the disease makes all the more desirable complete case records, etc.

4. The committee wishes to emphasize the need for the complete statistical study of the collected data on the mortality, morbidity, case fatality, duration, economic aspects, and therapeutics of the disease. Through the collection of the facts in a uniform manner, and through the analysis of such tabulated data, especially mathematical graduation, and testing and study of the figures, important contributions to the natural history and typical characters of the disease may be expected. General principles as to the etiology, fatality and practical management of influenza may follow from the extensive survey of the epidemic in the statistical laboratory as well as from the intensive bedside observation of single cases of the disease.

5. The measures recommended are calculated to be effective in the promotion of respiratory hygiene in general and particularly in the control of pneumonia and other respiratory infections.

ADMINISTRATIVE MEASURES FOR RELIEF.

The committee on administrative measures for relief would submit the following considerations as constituting a summary of the important measures for meeting epidemic conditions:

I. General Rules.

1. Compulsory reporting.
2. Isolation, by cooperation and education, to a point where it does not diminish the willingness of the physician to report.

3. Placarding would seem to be subject to the same limitations as is isolation.

4. The closing of schools, prohibition of funerals, etc., being preventive measures, are not touched upon in this report, except to mention that the closing of many agencies will release medical, nursing, and volunteer services for special influenza work.

5. It may be necessary to grant authority and power to the health authorities to administer relief.

II. Preliminary Measures.

1. The listing and distribution of resources, including physicians, nurses, social workers, nurses' aids, clerks, domestics, laundresses, automobiles, chauffeurs, mask makers and volunteers of all kinds.

All available publicity channels should be used to promote volunteer service.

An appeal should be made for voluntary donors of human blood serum from convalescent influenza patients, to be held in readiness for use in treatment.

2. The centralization of resources, under one control, with central and branch headquarters, the city being districted for medical, nursing and other work.

The central headquarters should be ordinarily under the supervision of a board representative of the most important agencies concerned, the board's work to be administered through a manager (presumably the health officer) selected for his fitness.

3. The service should be maintained on a 24-hour basis, and a system of outgoing and incoming telephone service is essential.

4. The local authorities should get and keep in touch with state and national agencies.

III. *Current and Continuous Analysis of Case Situation*

1. In the smaller communities a canvass should be made of all physicians, soliciting information as follows:

- (a) Number of cases under care.
- (b) Number of cases needing hospital treatment.
- (c) Number of cases needing home nursing care.
- (d) Number of cases requesting medical service but not reached.

This information will indicate the situation as regarding the need for emergency nursing and medical service, and should be acquired as fully as possible in larger communities, through various agencies such as a current lay or police canvass of homes, etc. The continuous classification of cases according to these groupings is of practical value.

IV. *Analysis, Augmentation and Organization of Principal Facilities.*

(A) *Field Nursing.*

1. Ordinarily nursing facilities utilized in general public health work should be diverted to meet the epidemic situation, and should be used on a district basis, with all other available facilities, under one supervision.

2. Nursing assistants, volunteers, etc., should be used wherever possible in homes and institutions, under expert supervision, after classification and assignment on a basis of minimum standards as to fitness, and such intensive training in the care of influenza and pneumonia patients as may be feasible.

3. From the standpoint of the patient, home treatment is to be advocated, if medical, nursing, disease preventive and other facilities are adequate.

4. Restriction so far as possible through the pressure of public opinion should be brought against the unnecessary use of private nurses.

5. Automobile transportation should be provided, and the nursing service used to encourage isolation and education.

6. Special record forms are essential for this and the medical work, and a special sub-committee is prepared to meet this problem.

7. Provision as to housing and care should be made for out of town nurses.

8. We recommend further training with reference to influenza for all graduates of Red Cross home nursing courses and more extensive use of their services. This would necessitate frequent and careful registration (names, addresses and telephone numbers) and further information regarding personal health, age and ability and willingness to serve.

(B) *Emergency Medical Service.*

1. The medical service should be handled through the central office, the physicians being responsible to the central office, though perhaps assigned to district offices.

2. In this emergency service there should be utilized all available physicians such as school and factory physicians, volunteers, practitioners on a paid basis, fourth year medical students, etc. This service should cover all calls reported as unreached by private physicians or received through other channels, and should be coordinated with the special nursing service, being provided with automobile transportation, machines being hired if necessary.

3. The emergency medical service should be used to select cases needing hospital care.

4. It may be feasible to institute a central clearing house in certain districts for private physicians' calls.

5. An arrangement should be made through the medical licensing board for the granting of temporary permits to practice to reputable physicians from out of the state, at the request of the Central Influenza Committee.

6. In some localities it may be feasible to district the local practitioner and to have him meet special calls on a part time basis for adequate compensation.

7. Certain of the relatively non-essential specialties should be discouraged, and the physicians in those specialties urged to volunteer for emergency district work. This type of service may be operated on a pay or free basis.

8. Presumably some effort should be made, through an authoritative medical commission, to suggest standard methods of treatment, and wise limitations as to therapeutic procedure.

(C) *Hospital Facilities.*

1. It is essential that the facilities, if possible, be kept ahead of the demand. A daily canvass should be made and data collected regarding available beds, medical and nursing needs, domestics, food, cots, supplies, etc. A regular visit by an inspector will probably prove more effective than an attempt at telephone communication.

2. Under most conditions a central clearing house, covering most if not all of the hospitals, is advisable for the admission of cases. Through this channel the severer cases may receive first consideration. Owing to constant changes in the hospital bed situation, the daily canvass of facilities may not be wholly depended upon; on the contrary, it may usually be necessary to telephone the hospital in order to make sure regarding the admis-

sion of a particular case. In any event the hospitals, if facilities are inadequate, should be impressed with the necessity for admitting only the most severe or needy cases, pay or free. Special hospital arrangements should be provided for pregnant women.

3. It is advisable to add wards or tents or new equipment to existing institutions rather than to establish entirely new emergency hospitals. If practicable, certain hospitals may be urged to handle influenza cases exclusively.

4. Non-emergency surgical and chronic medical cases amenable to home treatment should be dehospitalized.

5. A convalescent home, if adjacent to the hospital, may serve for the care of mild and convalescent cases, thereby increasing the space in the hospital for acute cases, obviously involving an increase in the nursing facilities.

6. A canvass of ambulance facilities should be made, ambulances being requisitioned with payment, or hired by contract, if necessary. Automobiles and motor trucks should be potentially mobilized for this purpose. Frequently military equipment may be used if accessible.

V. *Social and Relief Measures.*

1. The central office should keep the family advised regarding the patient, thereby saving telephone calls, trolley fares and worry on the part of the family, and thereby increasing the willingness for hospitalization.

2. Volunteer workers such as Red Cross volunteers, teachers, relatives, etc., should be placed in care of families where the responsible members are dead or hospitalized, this service being under expert social supervision, and the families in touch with the supply system. Supervision of placed-out children is also necessary.

3. Homes should be investigated before patients are discharged into them, when destitution or other untoward circumstances are apparent.

4. Precaution should be taken that institutions and families too busy with the influenza situation to look after their own needs, are covered by the general relief measures.

5. Ordinary charitable relief should be handled through the routine agencies, the service coördinated with the other epidemiological measures. Churches, lodges, etc., should be urged to handle their own cases, in order to relieve the pressure on the central agency. Aid should be immediate, without protracted investigation.

6. Recreation facilities (motoring, etc.) should be provided for the physicians and nurses while off duty.

VI. Food.

1. Available central cooking facilities should be used so far as is necessary, such as the dietetic equipment in high schools, normal schools, colleges, etc., with a delivery system to families and institutions in need.

2. Individual families should be encouraged to cook additional amounts, the same to be delivered to central diet kitchens for distribution, a standard list of prepared foods needed being devised and advertised, with recognition of racial customs and preferences.

3. It may be necessary to establish canteens in sections of the city.

VII. Laundry.

1. A special collection and distribution system may be essential both for homes and institutions.

2. It may be necessary to take over a public laundry with compensation, or a private non-medical institution laundry.

VIII. Provision for Fatalities.

1. Death reporting should be prompt (24 hours) and a record kept so as to insure prompt disposal of bodies.

2. A daily canvass of available coffins should be made, labor assured for construction, and possibly no coffins sold without the permit of the Influenza Administration Office.

3. If morgue facilities are inadequate a central place should be provided, with embalming facilities, for the temporary disposal of bodies.

4. A canvass of hearses should be made and regulations issued prohibiting unnecessarily long hauls, insisting on maximum capacity loads, etc. A central control will prevent unnecessary duplication as to routes, etc.

5. A reserve supply of trucks and automobiles should be at hand for use in various ways in connection with the handling of fatal cases.

6. The number of graves required should be estimated and labor released from public works or secured through other channels (possibly military) for digging. Possibly temporary trench interment may be necessary.

IX. Education, Instruction and Publicity.

Literature and special instructions will be necessary on many phases, including the following:

1. Instructions to physicians as to reporting, facilities available, district arrangements, etc.

2. Advice to physicians regarding treatment standards and suggestions.

3. Instructions for families, to be distributed by nurses, physicians, social workers, druggists, etc., covering the problems of care during the physician's absence.

4. Instructions to the public as to where aid may be secured, to be printed in various languages, and distributed by druggists, displayed in street cars, used in the press, etc.

5. Instructions for families on "What to do till the doctor comes."

6. Instructions to physicians, factory managers, school superintendents, etc., urging the necessity for immediate home and bed treatment at the first sign of respiratory disease.

7. Popular literature on the essentials of adequate care, the danger of returning to work too soon, etc. Popular press space is worth paying for, if it cannot be secured otherwise.

8. Popular publicity as to legitimate medical, nursing, undertaker, drug, and other charges, to prevent profiteering.

X. *Miscellaneous.*

1. The coöperation of pharmaceutical agencies should be secured to insure an adequate supply of drugs and druggists.

2. Influenza victims and their families should have "first call" on fuel deliveries.

3. While follow-up procedures are not legitimately a factor in the epidemic situation, their consideration is essential to an adequate meeting of the entire problem. This means adequate provision for medical examination and nursing care, relief measures, industrial employment problems, the follow up of special sequelæ such as cardiac affections, tuberculosis, etc.

4. It is finally suggested that Health Department draw up a program based on the above outline, holding it in reserve for future use, if not immediately needed, and modifying the proposal to fit the size and other characteristics of the particular community.

THE BACTERIOLOGY OF THE 1918 EPIDEMIC OF SO-CALLED INFLUENZA.

The epidemic disease known as influenza is believed to be due to an undetermined organism which causes an infection that lowers the resistance of the body as a whole, and of the respiratory organs in particular. This allows the invasion of other pathogenic microorganisms. The most important complicating infections are due to the influenza bacilli, different strains of pneumococci and different varieties of streptococci. Some careful observers regard certain of these organisms as the primary cause.

In each case, one or several of these microorganisms may be present. In different portions of the country the dominating variety of organism has been found to differ.

VACCINES.

Assuming that the cause of the epidemic is an unknown virus, it does not seem possible at present to prevent the primary disease by vaccination with known organisms. Against the secondary infections, there would seem to be a theoretical basis for the use of vaccines, and especially for the use of vaccines prepared from organisms responsible for complications which may differ in various localities at various times. This variable bacterial flora may militate against the practical application of vaccination on a large scale, because it would seem to require frequently repeated vaccinations with the flora that may be met with. It is impossible at present to evaluate the reports from the use of these vaccines adjusted to meet local conditions. More data obtained under carefully controlled conditions are needed.

Stock vaccines made from the influenza bacillus alone or from other bacteria, have been used to considerable extent. The injections of stock vaccines have seemed to mitigate to some degree some outbreaks

of influenza and also the severity of the complicating infections; but in those instances in which the results of the use of vaccine have been controlled, no appreciable results have been obtained. The fact that the vaccine is usually employed after the epidemic has broken out and is perhaps on a decline, and the fact that an unknown number of people have been exposed, make it very difficult to draw conclusions as to its efficacy.

RECOMMENDATIONS.

Your committee recommends that until such time as the efficacy, or the lack of efficacy, of prophylactic vaccination against influenza is established, vaccine if used, should be employed in a controlled manner, under conditions that will allow a fair comparison of the number of cases and of deaths among the vaccinated and non-vaccinated groups. Particular attention should be directed to securing data as to the period in the epidemic at which vaccinated and non-vaccinated persons developed the disease.

Your committee is of the opinion that the indiscriminate use of stock vaccines against influenza and influenza and pneumonia cannot be recommended.

Nothing in these recommendations should be interpreted as discouraging the use of a pneumococcus stock vaccine against lobar pneumonia.

This epidemic emphasizes the importance of properly equipped laboratories.

HISTORY AND STATISTICS OF THE EPIDEMIC.

Your sub-committee wishes to say that in view of the fact that the historical and other data of the epidemic are still in process of collection, no positive statement can be made at the present time on the precise incidence of the disease in the American population. On the basis of the best data available your sub-committee estimates that there were not less than

400,000 deaths from the disease in the United States during the months of September, October and November, 1918. The major portion of this mortality occurred at ages 20-40, when human life is of the highest economic importance. We would suggest that this sub-committee be authorized to cooperate with the special committee on statistical study of the epidemic of the Section on Vital Statistics of this Association, and that the data collected through that latter special committee be reported through the sub-committee on history and statistics of the epidemic to the general reference committee on the influenza epidemic. Standard forms for purposes of statistical tabulation, analysis and graphic presentation will be submitted in a supplementary report at an early date.

SUGGESTIONS.

In view of the probability of recurrences of the disease from time to time during the coming year, health departments are advised to be ready in advance with plans for prevention, which plans shall embody the framework of necessary measures and as much detail as is possible. Laws plainly necessary should be enacted and rules passed now. Emergency funds should be held in reserve or placed in special appropriations, which appropriations can be quickly made available for influenza prevention work.

The probability that as an after effect of the influenza epidemic there will be an unusually high pneumonia rate for several years should be taken into consideration.

Of measures for the control of the disease, bacteriologic studies as to the nature of the organisms causing the primary infection and as to bacteria associations, new and improved procedures leading to the production and use of effective vaccines and curative sera, and the fresh air treatment of the infected, appear to offer most promise.

APPOINTMENT AND ORGANIZATION OF THE
COMMITTEES.

The executive committee of the American Public Health Association appointed the following reference sub-committees on influenza:

*Sub-Committee on Bacteriology of the 1918
Epidemic of Influenza.*

Dr. W. H. Park of New York City,
Chairman.

Dr. G. W. McCoy, Washington, D. C.

Dr. Henry Albert, Iowa City, Iowa.

Dr. D. J. Davis, Chicago, Illinois.

*Sub-Committee on History and Statistics
of the Epidemic.*

Dr. William H. Davis, Washington,
D. C., *Chairman.*

Frederick L. Hoffman, Newark, N. J.

Dr. John T. Black, Hartford, Conn.

E. W. Kopf, New York City.

*Sub-Committee on Administration of Meas-
ures for Relief.*

Dr. D. B. Armstrong, Framingham,
Mass., *Chairman.*

Dr. W. C. Woodward, Boston, Mass.

Miss Eunice H. Dyke, Toronto, Canada.

Miss Edna L. Foley, Chicago, Ill.

Sub-Committee on Measures for Prevention.

Dr. Rupert Blue, Washington, D. C.,
Chairman.

Dr. W. A. Evans, Chicago.

Dr. J. A. Haynes, Columbia, S. C.

Dr. M. S. Fraser, Winnipeg, Man.

The four sub-committees formed a general committee of which Dr. Rupert Blue was chairman and Dr. W. A. Evans, vice-chairman. The various sub-committees attended the discussions on influenza and read the papers and discussions. The general committee held one meeting at which the sub-committees presented their reports. The report of the sub-committee on relief was discussed by the general com-

mittee, but not voted on or adopted. It is printed substantially as presented by the sub-committee to the general committee.

The report of the sub-committee on bacteriology was presented to the general committee and by them discussed, but not voted on or adopted by the general committee. It is printed as presented by the sub-committee.

The report of the sub-committee on history and statistics was presented to the general committee and by them discussed but was not voted on or adopted by the general committee. It is printed as it was presented by the sub-committee.

The sub-committee on measures for prevention suggested a first draft or rough sketch.

On the last day of the meeting, the executive committee of the Association appointed an editing committee composed of Dr. W. A. Evans, chairman; Dr. D. B. Armstrong, Dr. W. H. Park and Dr. William H. Davis, each representing a sub-committee, and Dr. W. C. Woodward and Mr. E. W. Kopf, as editorial advisors, to edit the report of the reference committee and to carry it through the press and to distribute it to those in attendance on the meeting.

The committee read the reports of the committees on statistics, laboratory problems, and measures for relief, but did not alter them. They wrote the report on prevention.

Very respectfully submitted,

W. A. EVANS, *Chairman.*

D. B. ARMSTRONG.

WILLIAM H. DAVIS.

E. W. KOPF.

WILLIAM C. WOODWARD.

NOTE: Dr. W. H. Park, having returned to New York, did not serve on the editorial committee.

[Chicago,] December 13, 1918.