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Pittsburgh Meeting of Public Health Study Section

—An Evaluation of Study Methods—

Some 70 persons concerned with investigations in various aspects of public health met May 10 and 11, 1950, in Pittsburgh, Pa., at the invitation of the Public Health Study Section of the Public Health Service, and the Graduate School of Public Health, University of Pittsburgh. They met to analyze and evaluate methods used in public health research as presented by three groups of investigators conducting studies of (*a*) community health problems; (*b*) diagnostic and therapeutic techniques; and (*c*) long-term trends in morbidity and related phenomena. One of the purposes of the meeting was to provide both the members of the Study Section and prospective applicants for research grants with a consensus of criteria to guide in the formulation and appraisal of applications.

On the basis of critiques and general discussion of the methodology used in 10 studies in these 3 fields, the conferees were asked to analyze the basic principles illustrated and to establish criteria which could serve as guides in planning future research of similar types. The emphasis of the Conference was on methodology in studies of individuals, population groups, and social organizations—studies that cannot be conducted in the rigidly controlled environment of a laboratory.

The members of the Study Section, at the time of the meeting, were Dr. Lowell J. Reed, Johns Hopkins University, Chairman; Dr. Philip E. Blackerby, Jr., W. K. Kellogg Foundation; Dr. Carl Buck, University of Michigan; Dr. Antonio Ciocco, University of Pittsburgh; Maj. C. M. Eberhardt, Department of the Army; Dr. Franz Goldmann, Harvard School of Public Health; Dr. Bascom Johnson, Jr., Veterans Administration; Dr. Hugo Muench, Harvard School of Public Health; George St. J. Perrott, Public Health Service; Marian Randall, Visiting Nurse Service of New York; Dr. Edward S. Rogers, University of California (Berkeley); Dr. Rupert B. Vance, University of North Carolina.

This summary was prepared by Dr. Antonio Ciocco, University of Pittsburgh, and Martha D. Ring, Division of Public Health Methods, Public Health Service.

To give the general framework of the Conference, this review summarizes points brought out in the papers and discussions, indicating the range in objectives, scope, study techniques, and methodological

problems which they illustrated. It concludes with an analysis of essentials that need careful definition, selection, and evaluation to assure the maximum validity of results in any study among groups of people. The principles and standards developed during the Conference are of particular significance since they represent the results of a first attempt at group analysis of public health studies and surveys on grounds of methodology alone.

Methods in Evaluation of Community Health Problems

The four papers in this group illustrate a wide diversity of objectives, techniques, and scope. The first describes the sponsorship, organization, procedures, and content of a Nation-wide survey of the health services received by children. The second gives the details of a study to determine the contribution a medical school can make in improving the medical care provided by physicians in a rural area. The third describes the use of opinion-poll techniques to evaluate the effectiveness of efforts in health education. The fourth analyzes the objectives and procedures of administrative studies of the health needs of a community.

1. Methodology in a Survey of Pediatric Services, by John P. Hubbard and Maryland Y. Pennell.

2. Evaluation of the Extension of Medical School Services to Rural Areas, by Roscoe L. Pullen.

3. Evaluation of Health Education Activities by Opinion-Poll Techniques, by Oscar J. Kaplan.

4. Surveying Community Needs, by Ira V. Hiscock.

The Nation-Wide Study of Child Health Services

One part of an ambitious survey, which included the field of pediatrics education, had two objectives: (1) To collect data that would have more local meaning than could averages for the whole country or a State, and (2) to stimulate the interest of practicing physicians and community health agencies in the provision of more adequate child health services.

The sponsorship of Federal, State, and local groups was essential to both objectives. The study was an almost unprecedented effort to reach all parts of the continental United States and Hawaii under decentralized procedures that were planned and guided to obtain as much uniformity and consistency of results as possible, considering the entire character of the project. Adjustment factors were worked out in detail in an additional sample study to correct for bias that would result from basing the findings for private practice solely on the data furnished by physicians who replied to mail questionnaires.

A major question raised in the discussion of the study related to the decision to attempt 100-percent Nation-wide coverage—a costly

undertaking that could not actually be achieved—rather than to plan for a series of sample studies that could have been subjected to intensive follow-up. The reply indicated that a sample basis was discarded because of the wish to stimulate participation in all States and localities. More than half the States have prepared reports on their health services, and the findings are already being used in recommendations for improvement based on local knowledge of conditions and deficiencies. The statistical value of the data collected has admittedly not been enhanced by the decision to attempt complete coverage, but the enthusiasm and interest created by that attempt have gone a long way toward furthering the study's objectives.

The pediatrics study made no attempt to measure the volume of health services received by children in terms of any standard of adequacy. Presentation of the data was limited to analysis of variations in services among regions, States, and county groups. Standards have been left for later determination by the Pediatrics Committee for the Improvement of Child Health. The State reports will reveal the extent to which the physicians of the State recognize the inadequacy of local services.

Extension of Medical School Services to Rural Areas

This project is designed to ascertain the extent to which the Tulane University Medical School could provide consultant and ancillary services to rural counties which lacked medical facilities and an adequate number of physicians. Like the pediatrics study, and many other types of investigation of community health problems, the Tulane project includes motivation of people as a major objective.

Accurate evaluation of the types of services that the medical school is attempting to provide for rural practitioners was cited as important in view of plans for regionalization of medical services elsewhere. In the discussion of this paper, attention was called to the danger of dual objectives in fact-finding research, since the one objective may conflict with the other. To determine the success of the Tulane project, the discussion brought out, it is necessary not only to have a carefully controlled experiment but also to develop indices that will measure the quality of medical care before and after the practitioners use the medical school services. It was also queried whether the use of a questionnaire on which the physicians answer specific questions is an adequate method of obtaining data unless the data are checked by personal visits.

Answers to these queries indicated that some improvement in medical care could be noted in the increasing willingness of physicians to have Tulane staff members provide consultation in the hospital. Most of the physicians are aged 45 years or over and all have large patient

loads. It has been impossible for them to keep abreast of medical education, and they need ancillary services to reduce the load they carry.

The questionnaire method of obtaining information was supplemented by personal visits to each physician, and some index of the physicians' qualifications was obtained in listing their medical education and training. The Tulane project, as planned, provided opportunity for collection of data in control counties, but the idea of controls was later abandoned. The project, nevertheless, gives some indication that the quality of medical care is improving in that the physicians now use the consultant and ancillary services provided by the medical school.

Opinion-Poll Techniques in Measuring Results of Health Education Activities

An attempt to measure the effect of health education campaigns and the relative usefulness of various media of communication is illustrated in the description of the purposes and methods of a project in San Diego, Calif. Questions were asked before and after an intensive health education campaign conducted by radio, press, and other media, to which both control and experimental groups were exposed. The experimental group received additional material by mail and other means.

As a discussion paper points out, the project shows how a specific technique of measuring attitudes and opinions can be brought to bear on many problems of immediate and practical importance. The project also indicates a method by which controlled experimentation can be carried out in field research on man. One of the first steps in such an undertaking is to perfect the tools of measurement—a step which forms the major part of the project in San Diego.

Surveying Community Needs

This paper, explaining the purpose and scope of community surveys, stresses the need to consider socioeconomic factors and relationships with reference to health problems and reviews criteria for measuring community needs. The paper outlines the historical development and validation of appraisal schedules for community health activities and gives special emphasis to methodological approaches in surveys of chronic illness, occupational health, and school programs. In describing the techniques of neighborhood studies, special attention is given to some of the important questions of purpose, cost, timeliness, and anticipated use of the survey.

As pointed out in the discussion of this paper, motivation of people is one of the main objectives of surveys of community needs—an objective illustrated in all four papers presented in this session of the Conference.

Methods in Evaluation of the Effectiveness of Diagnostic and Therapeutic Techniques

An important aspect of public health research methods is the analysis of the results of various techniques of diagnosis and treatment and of the suitability of these techniques for widespread application. The three papers presented in the second session of the Conference deal with the methodology of studies to determine the effectiveness of nasopharyngeal irradiation on deafness, of influenza vaccination, and of tests for nutritional deficiency. They were followed by two discussion papers and by subsequent explanation of the reasons for choice of certain methods of study.

1. The Efficacy of Nasopharyngeal Irradiation for the Prevention of Deafness in Children, by William G. Hardy and John E. Bordley.

2. Plan for the Evaluation of Vaccination Against Influenza, by Thomas Francis, Jr.

3. Evaluation of Diagnostic and Therapeutic Tests for Nutritional Deficiency States, by Dorothy G. Wiehl.

Nasopharyngeal Irradiation for Prevention of Deafness

A study has been undertaken to determine whether children with impaired hearing and nasopharyngeal lymphoid tissue can be benefited by irradiation treatment and whether the treatment is suitable as a preventive public health measure. This paper gives details of the plan, the selection of children to be studied, the efforts to assure accuracy and validity of observations, the selection of and procedures used for control and treatment groups, and the special problems encountered.

Two reasons were given in the discussion for limiting the groups of children to those with both lymphoid tissue and hearing impairment. In the first place, since about three-fourths of all children in the age group studied have hyperplastic nasopharyngeal lymphoid tissue, some other limitation on selection would have been necessary to keep the numbers studied within manageable proportions. In the second place, the irradiation technique used is specific for lymphoid tissue but not for hearing. In addition, to reduce subjective factors, it was decided to use a screening technique (pure-tone audiometry) that an adequately trained field staff can utilize accurately. The 8 or 10 categories of lymphoid tissue are difficult to classify and not sufficiently standardized for objective screening. Practical considerations and the wish to pin screening down to a specific symptom dictated the decision to restrict the study to children with hearing impairment.

Subjectivity in the experiment is avoided by keeping those who give the irradiation treatment unaware of which children receive irradia-

tion. The physician who records the results of the examinations of lymphoid tissue during the course of the study dictates the findings to a recorder without reference to records of previous findings.

The decision to cease withholding irradiation from any child in the control group if the child might benefit from the treatment has not yet been exercised. Parents were told that all children in the control and experimental group would receive periodic examination and that some would get treatment that might benefit them, though no predecision was made that the treatment would be beneficial. Most of the children in the study had subclinical conditions for which physicians would rarely be consulted. Children may be lost from both control and experimental groups when they go to clinics or physicians for treatment. Records are kept of any other treatment received by any of the children.

Evaluation of Vaccination Against Influenza

This paper gives a detailed account of the plan, organization, and procedures of a study to determine the effect of influenza vaccination on students in the Army Specialized Training Program in nine universities. Important in such studies are the homogeneity, stability, and size of the population to be studied, adequate supplies of standardized vaccine to be administered, timing of the vaccination (since the duration of the effect of the vaccine is not known), uniformity of procedures, close observation by competent investigators, confirmation of diagnosis, and adequate controls.

In response to a question raised in a discussion paper regarding the preferability of a prison type of population in research of this character, the main objective of the study was explained as primarily an effort to determine whether influenza vaccination would be of value in a military population. It was therefore decided to choose a population having approximately the same age characteristics and living conditions as the military. Earlier studies had been set up in institutions, but it proved difficult to induce infection with safe materials.

Some correlation was found between vaccination and immunity. The plans for the investigation included study of antibody titers in the experimental group before immunization and in the control group before exposure. Variation in influenza strains presents one problem, and the fact that only 20 percent of the people in the exposed control group get sick is another. No clear correlation is found between antibody level and susceptibility.

Evaluation of Tests for Nutritional States

The multiplicity of variables that must be analyzed and controlled in research on population groups is clearly indicated in this paper on methodology in studies of nutritional deficiency states. Diagnostic

criteria must be valid, objective, clearly defined, and held constant. Comparability of "control" and "experimental" groups must be established initially and evaluated periodically in terms of age, sex, developmental stage, genetic and environmental factors, deficiency status, nondietary conditioning factors, and dietary factors.

The complexity of the problem is illustrated by the fact that more than 50 known nutrients have a potentially equal number of nutritional deficiency states. The signs of deficiency can be accurately observed through X-ray and clinical photography in some instances, but it is difficult to isolate signs of single, specific deficiencies.

Problems of study methods in this and in the two other papers presented in this session, as one of the discussion papers pointed out, derive from difficulties in determining the size of the sample to be studied; in grading the results of diagnosis to establish critical points dividing positive from negative diagnoses on a scale that runs all the way from true positive to true negative; and in providing the most sensitive, specific, and objective diagnostic tests possible.

Methods in Long-Term Studies

The three papers giving methodological details of studies that extend over long periods, even a generation or more, bring out many of the same questions of sampling, standardization of measuring tools and observations, and consideration of environmental and social factors that may affect the findings that were brought out in the discussions of the two other groups of studies.

The first paper in the series is on longitudinal studies of child health and development. The second describes the base for epidemiological studies of chronic illness in the matched population records of the Eastern Health District of Baltimore. The third is a description of methods used in recent long-term morbidity studies in Hagerstown, Md.

1. Certain Technical Aspects of Longitudinal Studies of Child Health and Development, by Harold C. Stuart and Robert B. Reed.

2. Matched Population Records in the Eastern Health District, Baltimore, Md.: A Base for Epidemiological Study of Chronic Disease, by W. Thurber Fales.

3. Recent Long-Term Morbidity Studies in Hagerstown, Md., by Philip S. Lawrence and Clark Tibbitts.

Longitudinal Studies of Child Health and Development

The phase of this long-term project described is an attempt to measure the volumetric growth of subcutaneous tissue in a longitudinal section at the broadest part of the calf of the right leg. Since a high degree of correlation is found for volumetric growth of muscle, bone, and subcutaneous tissue, it is hoped that a method of combining observations on children can be developed to determine the relationships of illness and disabling conditions to growth patterns.

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The study is still in progress, and the relation of the findings on growth to health raises difficult questions of defining positive health and its gradations. The effects of specific short-term illness are being noted, but in many instances are found to be only temporary. Constants for development have not been used as such, but it is hoped that the development of one tissue can be related to the development of another tissue to observe differences in rates of growth.

If sample cross sections of different age groups had been used for study instead of long-term measurement of the same children, it would have been possible to determine different stages of development at different ages. Valid indices, however, would have required very large numbers of children in each age group. Furthermore, the cross-section study would have shown nothing of individual development or of growth rates at different ages, the objective of the present study. Establishing a cumulative index of health and development is a serious part of the problem. Comparisons of rates of tissue growth and rates of short-term illness have not yet been made. Relationships of height and body weight are available and can eventually be compared with health records.

Matched Population Records for Study of Chronic Disease

This paper on studies in the Eastern Health District of Baltimore, Md., gives an account of the historical development, purposes, and uses of the census records maintained for families and their individual members in certain areas of Baltimore for a quarter century.

Discussion of this paper centered on the application of the method to other areas. An ideal plan would perhaps involve keeping a continuous register of all individuals and households. An unqualified "yes" was the response to the question whether, after 20 years' experience, the investigator would use census records rather than a continuous name file if the studies were started afresh. The censuses conducted every 3 years provide a close check on over-all population movements. Any substitute in the form of current files would be expensive and time-consuming and no matter how carefully maintained, would need periodic checks. The Baltimore experience has shown the difficulty of matching records from one census to another. The 1945 addition of information to the basic records to show the maiden name of the wife, date of marriage, and previous residence has aided the process of tracing people.

Discussion turned to the problems of obtaining accurate information on illness illustrated by the various studies conducted by the Public Health Service. Some data on illness in the Eastern Health District in Baltimore were taken from medical records in institutions. In the 5-year morbidity study in 1938–43 housewives gave information, and diagnoses were verified by clinics and attending physicians.

The frequency of interviews needed in a morbidity study depends on the type of information to be collected. In studying chronic illness, for example, prevalence data may be about as useful as incidence data and are much easier to get. Prevalence of chronic illness measured by the number of cases disabling at a given time or at some time during a given period can be ascertained with fair accuracy by visits once a year, since the rates are not subject to much seasonal variation.

On the other hand, weekly or semimonthly visits are necessary to determine the incidence or prevalence of nondisabling acute illness, particularly for the minor respiratory diseases. Frequent visits, however, introduce problems of determining new cases as distinct from those that have carried over from a preceding period. More frequent visits increase the cost of the studies.

As a compromise, in a morbidity study on a broader scale, a new sample of households might be visited each month, and the prevalence of chronic illness recorded at each visit. In a year, such a study would furnish prevalence data for 12 times the number of households in each monthly sample. Accurate information on acute diseases could be recorded for the month preceding the visit, and the year's record would yield incidence data for acute conditions during 12 months which would roughly eliminate seasonal variations.

The difficulty of obtaining comparable data for, say, 10,000 individuals who are examined by several different physicians was indicated at this point. As to illness, it is easier to get comparable data in terms of disabling cases and those confined to bed, than for nondisabling cases. However, since chronic diseases are frequently nondisabling for long periods, it seems advisable to record at least this type of nondisabling illness. In the Baltimore survey "confined to house" was used as a more objective classification than "disabling," particularly in recording illness among children and adults who were not gainfully employed. The recorded "house cases" were of about the same frequency as "disabling cases," but the total number of days confined to house was considerably less than the total days of disability.

In this connection, the discussion stressed the need for health status studies so that data can be obtained for normal and well people also. The gap between clinical and public and preventive medicine needs to be bridged by studies of large groups of people who undergo thorough clinical examinations which will reveal their health status. Answers to simple questions put by an investigator are not enough, nor is mass screening alone sufficient. Furthermore, all factors in the social environment that have a bearing on health should be correlated with health findings. We now rely too heavily on income data alone.

Long-Term Morbidity Studies in Hagerstown

The Hagerstown studies, initiated in 1921, have provided a wealth of data that form part of the permanent records which are being organized in a family file. This paper indicates some of the methodological problems in connection with collection and verification of reports on illness and the need for new techniques for reporting in longitudinal studies. The multiple screening examination and symptom checklist, now in exploratory stages, merit study for this purpose. Problems of choosing the informant, of changes in the composition of the original population cohort, and of the intervals between observations were also stressed. Longitudinal studies offer great promise in obtaining information on the incidence and progress of chronic illness, the interrelation of illness and socioeconomic factors, and use and effectiveness of treatment programs. An essential for success is effective advance planning for the long-term period of study.

As pointed out in one of the discussion papers, long-term studies are apparently here to stay. The session on this group of studies was characterized as, in itself, a complete justification for the Conference. Studies stimulated by the discussion of methodology should considerably narrow the gap in present knowledge of how to obtain valid and useful data in public health studies.

Methodological Principles Illustrated

The range of public health research in communities and population groups is both broad and deep, as illustrated by the papers presented. A special committee appointed by the National Advisory Health Council has classified this research in five main groups:

1. Studies related to the extent and distribution of diseases or other public health problems in a community, population, or part of a population.
2. Studies on a community, population, or group basis, in relation to the pathogenesis or dissemination of diseases of public health importance.
3. Studies of the effectiveness of prophylactic or therapeutic procedures on a community, population, or group basis.
4. Studies designed to test the significance of a laboratory or clinical finding, or to test the validity of a laboratory technique, on a community, population, or group basis in relation to problems of public health importance.
5. Studies in public health methods.

The last group is further subdivided into four categories:

(*a*) Studies designed to solve organizational and administrative problems faced by health agencies in the mass application of new methods of diagnosis, prevention, and control of diseases of public health importance, and in the application of new measures for the maintenance of health.

(*b*) Studies designed to test or develop epidemiological methodology, or other specialized methodology used or presumably useful in public health practice.

(*c*) Studies of the productivity of public health practices already in process.

(*d*) Studies of the applicability of theories and hypotheses in public health organization and administration.

The broad scope of this research has resulted from the great medical discoveries that have revealed the relationships between health and disease and biological and social environment. The field of inquiry includes, broadly, determination of health needs, of factors associated with illness, development and improvement of the means of meeting health needs, and methods of applying the knowledge public health possesses and will possess. It is clear from the breadth of the professional field of public health that its prime purpose is to study man, not only as an individual, but also in his social and economic setting.

The methodological principles illustrated in the papers presented, and some of the problems encountered in maintaining those principles may be summarized under three heads: objectives, measurements, and controls. Following the discussion of these three points is an outline which evolved from the Conference as a checklist for evaluation of the soundness of a research project in its advance planning.

Objectives

A clear formulation of objectives is recognized as an essential first step in planning investigations in public health. This step is needed (1) to make sure that the study meets a recognized need for information, (2) to assure that the data collected will provide that information, (3) to keep the projects within manageable proportions, and (4) to obtain the financial support and other backing that will enable the investigators to undertake and complete the job.

Several types of objectives can be identified in the papers presented at this Conference. One objective is to increase scientific knowledge. Another is to learn the dimensions of a given problem or condition as a basis for social action. Another is to bring about social action as part of the study process. As the papers also indicate, a single project may have more than one objective. Many include motivation of people as a major purpose, while at the same time the project is designed to measure the extent of need for social action. The major difficulties arise when one of these objectives complicates or defeats accomplishment of the other.

In this connection, it may not be amiss to distinguish between surveys with research objectives and those aimed at motivating changes in social behavior. When undertaken for purposes of research, a survey is designed solely to increase knowledge by discovering the relationship between two or more variables within a systematic frame of reference. Its findings are then universally applicable under the conditions described. On the other hand, when a survey is designed to motivate social action, the facts and relationships revealed are likely to be applicable only to a highly specific time, place, or other condition.

Measurements

Rules governing careful definitions of the problems of investigation and precision in the selection of instruments apply equally to all types of studies. The units of count used may range from inches and pounds in measuring height and weight to days in bed for measuring severity of illness. They may include counts of the number of pathological examinations as well as the number of questionnaire responses expressing specific attitudes or opinion on a given question. In the relatively new and ever broadening field of public health studies, pioneering is still in progress in developing valid units which will measure social and economic phenomena and illness.

Many of the observations recorded in these studies run the danger of being colored by subjective factors among observers. Moreover, many of the things to be measured are intangible. Training and instruction of observers, tests to take account of their individual differences, and reduction of procedures to the simplest and most concrete terms will help to counteract the handicaps of using human tools to measure human phenomena.

In studies of diagnostic and therapeutic techniques it must be remembered that no technique is a perfect instrument. The technique may, for example, overdiagnose, exaggerating the true severity or prevalence of the conditions and classifying some negatives as positives. On the other hand, the technique may be adequate in identifying minimal cases and fail, as does the tuberculin test, in far-advanced cases.

These imperfections in diagnostic techniques must be judged in relation to their importance to the problem under investigation. In nutrition studies, for example, little harm may result from overdiagnosis and from subsequently prescribing unnecessary supplemental feeding. At the other extreme, erroneous designation of a person as syphilitic, tuberculous, or cancerous may entail far more serious consequences than would failure to diagnose a true positive. Issues such as these must be carefully weighed in establishing the techniques of the study.

The participants in the Conference focused considerable attention on the question of developing adequate indices to measure the quality of medical care. Among the measurements of diagnosis and therapy cited were the statistical indices derived from frequency of autopsies, pathological examination of tissues, hospitalization, referrals by general practitioners to specialists, and check of the accuracy of initial diagnosis by general practitioners and specialists against subsequent findings. Certain indices of quality of services are available and have been employed in varying degrees in statistics on hospital care and other services.

While it was recognized that units of measurement used in evaluating health programs must inevitably change with advances in medicine, definite criteria were held likely to remain constant for a long time. For most studies, the most adequate gage of quality of medical services at any period is the best practice then current. Realism is necessary, however, in considering such questions as the investment society is willing to make in providing medical care of high quality—a question no technician can answer. Other practical issues involve the range of special services that should be made available for limited numbers of people such as those on ships, and the decisions that must be made in setting standards for minimal services, such as the components of physical examinations for each age group.

Controls

The conferees pointed out that adequate controls or means of comparing one surveyed group with another are as essential in public health research as in any other type of scientific investigation. The need for predetermining the differences and similarities among groups in setting up controls was also stressed. Control areas or groups should have the same characteristics as the experimental areas or groups. Attention was called to the often-repeated contention that controls cannot be set up for service projects because the control areas or groups are affected either by the initial survey or by the project in the allied experimental group. If such effects are noted in the control group, however, either the control setup or the project itself was probably not well planned. Thus, if it were proposed to demonstrate that a certain type of immunization decreased susceptibility to the common cold, and if people in the control group were to have the immunization on their own accord, the project was not adequately planned to determine whether the immunization campaign affected the incidence of colds.

In tests of the efficacy of therapeutic techniques the problem is to evaluate the treatment as a means of curing or at least preventing the progression of the condition. This procedure requires an adequate device for selecting the impaired persons in the population, dividing them into comparable groups, giving one group the treatment to be tested, and giving the other group identical treatment except for the presence of the therapeutic agent. The two groups are then followed to observe cure or progression rates. The practical, ethical, and public relations problems of withholding the treatment from the control group were recognized. The benefits to be derived from conclusive results of the experiment are so great, however, that suitable controls should always be employed, and practical difficulties in conducting control studies should not be considered insurmountable.

Criteria for Field Studies

I. The objective or purpose of the study should be:
   1. Simple and direct;
   2. Clearly defined;
   3. Related to one or, at most, two facets of the basic problem to avoid dispersion of effort and meaningless results;
   4. Capable of conclusive results with facilities and materials available;
   5. Held constant during the experiment;
   6. Applied critically to all items and phases of the experiment to determine their significance.

II. The measurements used should be:
   1. Objective;
   2. Repeatable by different observers and at different times;
   3. Efficient in terms of clear and mutually exclusive divisions, undistorted scale, and broad range of values to be recorded;
   4. As simple, generally available, easily performed, and inexpensive as possible;
   5. Accurate in sensitivity and specificity;
   6. Tested in pilot study.

III. Groups to be studied should be:
   1. Representative;
   2. Cooperative;
   3. As completely comparable as possible—every effort should be made to extend this comparability to all variables other than those under examination (control and experimental groups);
   4. Available for continuous observation;
   5. Large enough to provide samples of adequate size to yield statistically meaningful results;
   6. Screened in relation to the purposes of the study;
   7. Tested in pilot study to determine extraneous factors.

IV. The collection of data should include:
   A. Written instructions which:
      1. Specify objectives of the study;
      2. Contain definitions of terms;
      3. Are clear and specific;
      4. Give rules for recording;
      5. Indicate frequency of observations;
      6. Are tested in pilot study.
   B. Staff for the study which is:
      1. Competent in use of techniques;
      2. Free of personal bias;
      3. Able to maintain good public relations;
      4. Adequately trained in pilot study.

C. Record forms which are:
    1. Clear;
    2. Convenient;
    3. Prescribed;
    4. Tested in pilot study;
    5. Related to plans for final tabulations.

V. Results of study should be:
    1. Related to objectives;
    2. Valid within stated intervals of reliability;
    3. Evaluated in light of assumptions and methodology;
    4. Generalized only with realization of limitations of the data.

Criteria that are particularly applicable to studies evaluating diagnostic and therapeutic techniques may be worded as follows:

A. Preliminary laboratory or clinical studies of the technique to determine its:
    1. Precision;
    2. Accuracy;
    3. Effectiveness of use by observers;
    4. Side effects;
    5. Costs.

B. Field tests to determine effectiveness in detecting:
    1. Absence or presence of condition under investigation;
    2. Ranges in variations from normal through abnormal conditions;
    3. Specificity in differentiating among diseased conditions.

C. Population studied should:
    1. Be representative of the universe under discussion;
    2. Include persons with commonly occurring miscellaneous disease;
    3. Exclude volunteers who may introduce spurious correlations.

D. Conduct of experiment should:
    1. Recognize disease as a dynamic state, either progressing or regressing;
    2. Make serial observations on both test and normal groups to:
        (*a*) assess full value of test;
        (*b*) ascertain complete effect of procedure;
    3. Ascertain stability and progression of successive readings;
    4. Determine difference in progression rates between normal and other groups;
    5. Provide follow-up to determine permanency of results.

Recent Court Decisions on Municipal Milk Inspection

By Murray Stein and Israel L. Sonenshein*

Recent litigation has thrown further light on the type of requirements a municipality, in protecting the health of its inhabitants, may validly impose with respect to the location of milk production, processing, and pasteurizing facilities as a condition to the offering of milk or milk products for sale within the municipality.

Since the Congress has not spoken to the contrary, the Supreme Court of the United States has recognized that milk regulation for the protection of public health lies within the sphere of State authority even though interstate commerce may be affected (*1*). Under validly delegated power, expressed or implied, from a State, the right of a municipality to regulate the preparation, care, custody, and delivery of milk to protect the public health is well settled. The Supreme Court has recognized that in the exercise of such powers a municipality may appropriately apply regulations to milk and milk products originating in remote areas in the interest of the safety, health, and well-being of its inhabitants (*2*).

Milk and milk products are not only necessary articles of food, but also are perfectly lawful subjects of commerce. Their flow in the ordinary currents of trade and commerce, whether interstate or intrastate, may not be abridged by municipalities or other governmental bodies further than reasonably necessary to protect and safeguard the public health (*3*). The reasonableness of an ordinance relating to location of pasteurization and processing plants and inspection of sources of supply of milk and milk products depends on the purpose to be accomplished by the ordinance and the effect upon all who must comply with it (*4*).

Interstate Competition Upheld

The Supreme Court of the United States in *Dean Milk Company* v. *Madison* (*5*) recently held invalid [1] as discriminatory against interstate commerce provisions in a municipal ordinance, enacted by a city in Wisconsin, which made it unlawful to sell any milk within the municipality as pasteurized milk unless it had been processed and bottled at an approved pasteurization plant within a radius of 5 miles from the central city square. The ordinance was contested by a

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[1] Justices Black, Douglas, and Minton dissenting.

corporation whose pasteurization plants were located in Illinois and which was denied a permit to sell its products within the Wisconsin municipality solely because its pasteurization plants were more than 5 miles away. The milk which the shipper sought to sell was supplied from farms and processed in plants licensed and inspected by public health authorities of Chicago. It was also labeled "grade A" under the Chicago ordinance which contains the grade A standards recommended by the Public Health Service.

The Court found that the municipal requirement that all milk be pasteurized at a plant within 5 miles from the center of the city constituted an economic barrier which protected a major local industry against competition from outside the State, and thus plainly discriminated against interstate commerce. A municipality cannot curtail interstate commerce, the Court held—even in the exercise of its unquestioned power to protect the health and safety of its people—if reasonable nondiscriminatory alternatives adequate to conserve legitimate local health interests are available. The following were then listed as available, reasonable, and adequate alternatives:

1. Inspection by municipal officials of distant milk sources for which the receiving municipality could charge the actual and reasonable cost of such inspection to the shipping producers and processors.[2]

2. Adoption of Section 11 of the Model Milk Ordinance recommended by the Public Health Service. This section imposes no geographical limitation on location of milk sources and processing plants, but excludes from the municipality milk not produced and pasteurized conformably to standards as high as those enforced by the receiving city.

In implementing such an ordinance, the importing city may obtain ratings on milk and milk products of distant origin based on uniform standards which have been put into effect by health authorities in the jurisdiction where production and processing occur. The receiving city may determine the extent of enforcement of sanitary standards in the exporting area by verifying the accuracy of safety ratings of specific plants or of the milkshed in the distant jurisdiction through the Public Health Service's spotchecks of local ratings.

Another section of the municipal ordinance, considered by the Supreme Court in the Dean case, prohibits the sale of milk, or the importation, receipt, or storage of milk for sale in the municipality unless it comes from a supplier possessing a permit issued after an

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[2] In *Miller* v. *Williams*, 12 F. Supp. 236 (D. C., Md. 1935), while a municipality was held to be without authority to bar milk and milk products from another State merely because of alleged impracticability of adequate and effective inspection by its own representatives of remotely located producers and pasteurizing plants, it was held to have authority to impose regulations which would afford every reasonable assurance to the local authorities for the protection of the health of the community. It was pointed out by the Court that, in lieu of personal inspection by its officials, the municipality probably could require certificates from appropriate officials of other States attesting that specified standards have been met.

inspection by officials of the receiving municipality. This provision was attacked by the shipper insofar as it expressly relieves municipal authorities from any duty to inspect farms located beyond 25 miles from the center of the city. The State Supreme Court thought it unnecessary to pass upon the validity of the 25-mile limitation, apparently, in part, because this issue was made academic by its decision upholding the 5-mile section. As the United States Supreme Court held the 5-mile section to be an unreasonable burden on interstate commerce, the determination of the validity of the 25-mile section is now necessary. Thus, the case was remanded to the State court for further proceedings not inconsistent with the principles announced by the United States Supreme Court in its opinion on the 5-mile section. The section containing the 25-mile limitation seems to be open to legal objections similar to those arising in consideration of the 5-mile section.

Interstate Practices Vary

Although the Supreme Court of the United States has held that local ordinances are invalid when they exclude wholesome milk or milk products shipped from a point outside the State, unless they have been pasteurized or produced within a specified local area, the State court decisions are divided as to the validity of such provisions when they are applied to milk or milk products produced or processed at a distant point within the same State. In the absence of overriding State statutes, the State of California (*6*), Georgia (*7*), New York (*8*), Texas (*9*), and Wisconsin (*10*) have indicated that local ordinances which require milk to be pasteurized or processed within a prescribed inspection area are valid.[3] When the State Legislature, however, has taken to itself the field of inspecting the production and processing of milk and milk products, the local authorities do not have the power to pass a valid ordinance imposing an area of inspection limits (*11*), and milk and milk products which meet State requirements may not be excluded by local authorities. Thus, subsequent court decisions in California[4] and Texas (*12*), which have since enacted general

[3] The Supreme Court of Minnesota, however, has held that an ordinance which required milk to be pasteurized in plants located within a city's limits set up too limited an inspection area, and was unconstitutional as unreasonably violating the property and contract rights of a shipper of milk located 30 miles from the municipality and within the same State as the municipality. *State* v. *City of Minneapolis*, 190 Minn. 138, 251 N. W. 121 (1933).

[4] In *La Franchi* v. *City of Santa Rosa*, 8 Cal. (2d) 331, 65 P. (2d) 1301 (1937), an ordinance prohibiting the sale of pasteurized milk in a municipality unless the milk is pasteurized within the corporate limits of the municipality was held invalid when the producer was within the same State inspection district as the municipality. The ordinance was found to be in conflict with overriding State statutes giving the State supervision of milk inspection services and providing for the right of sale of State inspected milk in the district in which the milk is inspected and graded. Distinguished from *Witt* v. *Klimm*, 97 Cal. App. 131, 274 P. 1039 (1929), which dealt with milk brought in from another inspection district. See also *Meridian Limited* v. *Sippy* 54 Cal. App. (2d) 214, 128 P. (2d) 889 (1942).

State laws governing the inspection of the processing and production of milk, have held invalid local ordinances which excluded milk not eligible to be inspected by officials of the enacting municipalities.

The Supreme Court of Illinois, in a series of decisions, had held invalid local ordinances which prohibit the sale of milk or milk products within a municipality unless processed or produced within a specified area reaching more than half a mile beyond the municipal limits (*13*). The Illinois ordinances were declared invalid because they constituted, in the court's opinion, attempts by the municipalities to exercise territorial jurisdiction beyond the powers conferred on them by State legislation. The State law provides that municipalities are to have jurisdiction over all places within one-half mile of the corporate limits for the purpose of enforcing health and quarantine ordinances and regulations. The Illinois court has also relied on the fact that no means was left available whereby sale of wholesome milk pasteurized or produced outside the city could be made legal. Finally, the State court stressed the lack of any contention that the only reasonable manner in which a city can inform itself of the quality of milk brought into the city is by its own inspection at the source of supply and the pasteurizing plant (*14*).

A municipality in Illinois has been held without authority to conduct inspections of sources of milk and milk products located outside its territorial jurisdiction (*15*). In most jurisdictions, however, municipalities are authorized to exercise certain extraterritorial functions for the preservation of public health. Such functions include inspection of sources of milk and milk products with or without a right to charge a reasonable fee therefor (*16*).

Summary

In summary, the courts have consistently upheld ordinances of municipalities regulating milk and milk products for the protection of the health of its inhabitants, if the power to promulgate such ordinances is validly delegated to the municipality by the State, and if the ordinances are otherwise consistent with relevant State law. The creation of a limited inspection area within which milk must be pasteurized, processed, and bottled as a condition precedent to inspection is invalid as discriminatory against interstate commerce when reasonable nondiscriminatory alternatives sufficient to protect local health interests are available. Such reasonable alternatives include either the inspection by municipal officials of distant milk sources or the adoption of section 11 of the Model Milk Ordinance recommended by the Public Health Service, which excludes from the municipality milk which does not conform to production and pasteurization standards as high as those enforced by the receiving city.

REFERENCES

(1) *Dean Milk Co.* v. *Madison*, 340 U. S. 349 (1951); *Milk Control Board* v. *Eisenberg Farm Products*, 306 U. S. 346 (1939); *Baldwin* v. *G. A. F. Seelig, Inc.*, 294 U. S. 511 (1935).
(2) *Dean Milk Co.* v. *Madison*, supra.
(3) *Miller* v. *Williams*, 12 F. Supp. 236 (D. C., Md. 1935); *Prescott* v. *City of Borger*, 158 S. W. (2d) 578 (Texas, 1942); *Grant* v. *Leavell*, 259 Kentucky 267, 82 S. W. (2d) 283 (1935); *Lang's Creamery* v. *City of Niagara Falls*, 231 N. Y. S. 368 (1928); *Whitney* v. *Watson*, 85 N. H. 238, 157 A. 78; *Cofman* v. *Ousterhous*, 40 N. D. 390, 168 N. W. 826.
(4) *Dyer* v. *City Council of City of Beloit*, 250 Wis. 613, 27 N. W. (2d) 733 (1947).
(5) 340 U. S. 349 (1951).
(6) *Witt* v. *Klimm*, 97 Cal. App. 131, 274 P. 1039 (1929).
(7) *Trotzier* v. *McElroy*, 186 S. E. 817 (Georgia, 1936).
(8) *Lang's Creamery* v. *City of Niagara Falls*, supra.
(9) *McKenna* v. *City of Galveston*, 113 S. W. (2d) 606 (1938).
(10) *Dyer* v. *City Council of Beloit*, supra.
(11) *Associated Dairy Products* v. *Paige*, 63 Ariz. 393, 206 P. (2d) 1041 (1949).
(12) *Prescott* v. *City of Borger*, supra.
(13) *Dean Milk Co.* v. *City of Aurora*, 404 Ill. 331, 88 N. E. (2d) 827 (1949); *Dean Milk Co.* v. *City of Waukegan*, 403 Ill. 587, 87 N. E. (2d) 751 (1949); *Higgins* v. *City of Galesburg*, 401 Ill. 87, 81 N. E. (2d) 520 (1948).
(14) *Dean Milk Co.* v. *City of Waukegan*, supra.
(15) *Dean Milk Co.* v. *City of Elgin*, 405 Ill. 204, 90 N. E. (2d) 112 (1950).
(16) *Terry Dairy Products Co.* v. *Beard*, 216 S. W. (2d) 860 (Arkansas, 1949); *City of Newport* v. *Hiland Dairy*, 164 S. W. (2d) 818 (Kentucky, 1942). But cf. *McClendon* v. *City of Hope*, 230 S. W. (2d) 57 (Arkansas, 1950); *City of Abilene* v. *Tennessee Dairies*, 225 S. W. (2d) 429 (Texas, 1949).

Incidence of Disease

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

Reports From States for Week Ending June 23, 1951

For the current week 211 cases of poliomyelitis were reported as compared with 162 for the preceding week. For the corresponding current week, 335 and 408 cases were reported for 1950 and 1949, respectively. States reporting 10 or more cases for the current week were: Alabama, 18; California, 28; Florida, 10; Louisiana, 13; Oklahoma, 13; and Texas, 33.

Epidemiological Reports

Meningococcal Meningitis

Dr. A. L. Gray, Mississippi State Board of Health, reports an outbreak of meningococcal meningitis involving two related and associated families. The first date of onset was May 17. The infection was of fulminating type with meningococcemia heavily involved and was spread apparently by direct familial association. Of the five cases, three died. All contacts of these cases were given prophylactic treatment.

Infectious Hepatitis

Dr. I. J. Tartakow, Epidemiologist, Nassau County New York Health Department, reported five cases of infectious hepatitis in Baldwin. The first case developed in a salesman on June 21, and later in three of his children and a neighbor. The source of the infection is unknown.

Dr. Tartakow also reports five cases of infectious hepatitis in a rooming house in Hempstead. The onset of the first case was April 6. Four cases occurred among 19 adult occupants and 1 case among the 7 children. An additional case occurred in an adult contact. The first case was in a 2-year-old child who presumably contracted the disease while visiting a relative who developed hepatitis 20 days later. The cases were confined to the six families using a common kitchen. The other eight boarders not using the common kitchen were not affected. The kitchen showed evidence of rodents, improper garbage disposal, and need for general cleanliness.

Food Poisoning

Dr. S. S. Farnsworth, Oakland, Calif., Health Director, and the San Francisco District Inspector, Food and Drug Administration, report that approximately 300 of a total of 750 employees of the Highland Hospital, were ill with food poisoning April 29. The illness was chiefly diarrhea with little vomiting. All personnel returned to work the next day. Preliminary investigation indicates the causative agent was probably poorly cooked turkey. Further investigation will continue under city and State public health officers. No food of interstate origin was apparently involved.

Gastroenteritis

Dr. J. C. Hart, Connecticut Department of Health, reports two outbreaks of gastroenteritis in a private school occurring 6 days apart. Both followed turkey dinners. In the first, about 65 out of a total of 135 were ill; and in the second, about 70. In both, the incubation period was 10 to 24 hours. Both outbreaks were characterized chiefly by abdominal pain and diarrhea. Most cases recovered in about 12 hours. Reports on cultures of the turkey and stools of the food handlers are not available.

Influenza

The Influenza Information Center, National Institutes of Health, reports the study of a strain of influenza virus submitted from Puerto

Comparative Data For Cases of Specified Reportable Diseases: United States

[Numbers after diseases are International List numbers, 1948 revision]

Disease	Total for week ended—		5-year median 1946–50	Seasonal low week	Cumulative total since seasonal low week		5-year median 1945–46 through 1949–50	Cumulative total for calendar year—		5-year median 1946–50
	June 23, 1951	June 24, 1950			1950–51	1949–50		1951	1950	
Anthrax (062)	------	1	1	(1)	(1)	(1)	(1)	39	20	26
Diphtheria (055)	48	44	98	27th	4,826	7,280	10,786	1,919	3,009	4,428
Encephalitis, acute infectious (082)	23	27	11	(1)	(1)	(1)	(1)	425	344	225
Influenza (480–483)	575	275	312	30th	129,281	148,163	148,163	114,739	137,579	127,352
Measles (085)	11,802	10,097	10,678	35th	456,576	276,598	539,754	427,875	257,469	504,808
Meningitis, meningococcal (057.0)	59	73	57	37th	3,349	3,121	3,032	2,388	2,207	2,060
Pneumonia (490–493)	694	987	(2)	(1)	(1)	(1)	(1)	[3]41,635	54,207	(2)
Poliomyelitis, acute (080)	211	335	309	11th	[4]1,278	1,658	1,658	[4]2,491	2,789	2,006
Rocky Mountain spotted fever (104)	16	19	22	(1)	(1)	(1)	(1)	110	146	154
Scarlet fever (050) [5]	914	631	1,018	32d	65,998	54,269	78,148	50,307	37,830	55,604
Smallpox (084)	1	------	1	35th	15	44	66	7	23	45
Tularemia (059)	17	20	20	(1)	(1)	(1)	(1)	339	496	497
Typhoid and paratyphoid fever (040,041) [6]	57	88	88	11th	614	818	849	1,049	1,328	1,334
Whooping cough (056)	1,297	2,653	2,052	39th	[7]59,644	88,432	80,315	[7]38,042	66,916	49,049

[1] Not computed. [2] Data not available. [3] Additions: Week ended June 16—West Virginia 6 cases, Florida 15, Utah 2; week ended June 9—Tennessee 23. [4] Deduction: North Carolina, week ended June 9, 2 cases. [5] Including cases reported as streptococcal sore throat. [6] Including cases reported as salmonellosis. [7] Addition: West Virginia, week ended June 16, 13 cases.

Rico. This strain was isolated in May from a case of influenza occurring during the recent outbreak in Puerto Rico. Antigenic analysis of the strain indicates that it is rather closely related to strains isolated during the outbreaks in Europe and in America during the past winter.

Dr. E. H. Lennette, California State Department of Public Health at Berkeley, reports a significant increase in titer by the complement-fixation test against influenza B virus in one paired serum specimen from a patient whose onset of illness was in May.

Diphtheria

Dr. D. H. Stevens, Maine Department of Health and Welfare, reports an outbreak of 10 diphtheria cases in a State hospital. The first case was in an attendant, whose source of infection was not discovered. The onset was on May 6. Since that time two other attendants and seven patients have contracted diphtheria with one fatal case (a patient, aged 65).

Dr. W. L. Halverson, California Director of Health, supplements a previous report of diphtheria in one of the northern counties. During May, 10 cases were reported. Two of the cases were in nurses aides (ages 21 and 48 years) who had had contact with two patients before the diagnosis of diphtheria was established. One case was in a hospital janitor (age 69 years) and two others were in ward patients of this hospital (ages 82 and 86 years). Some of these cases were mild. Cultures from six cases were submitted for typing to the School of Public Health, University of California, Berkeley.

Reported Cases of Selected Communicable Diseases: United States, Week Ended June 23, 1951

[Numbers under diseases are International List numbers, 1948 revision]

Area	Diphtheria (055)	Encephalitis, infectious (082)	Influenza (480–483)	Measles (085)	Meningitis, meningococcal (057.0)	Pneumonia (490–493)	Poliomyelitis (080)
United States	**48**	**23**	**575**	**11,802**	**59**	**694**	**211**
New England	**4**	**2**		**986**	**6**	**29**	**2**
Maine	1			59	2	2	
New Hampshire				47	2	3	
Vermont				58			
Massachusetts	3	2		581	2		
Rhode Island				26		3	
Connecticut				215		21	2
Middle Atlantic	**4**	**8**	**1**	**2,608**	**16**	**60**	**13**
New York	3	4	[1] 1	1,248	9	7	9
New Jersey		4		763	1	23	4
Pennsylvania	1			597	6	30	
East North Central	**6**	**5**	**6**	**2,786**	**10**	**75**	**33**
Ohio	1			783	5		5
Indiana	2	1		44		8	4
Illinois		1	4	361	2	28	8
Michigan		3	2	360	2	39	7
Wisconsin	3			1,238	1		9
West North Central	**5**		**8**	**649**	**4**	**39**	**15**
Minnesota			2	190		8	4
Iowa				18			1
Missouri	2		3	182	2		2
North Dakota			3	106	1	18	2
South Dakota	3			15			
Nebraska				10			3
Kansas				128	1	13	3
South Atlantic	**10**	**4**	**140**	**1,044**	**7**	**83**	**18**
Delaware				29			
Maryland			1	324	1	27	
District of Columbia				52		10	
Virginia	1	1	120	329	1	28	
West Virginia	1			59			
North Carolina	3	1		46	2		3
South Carolina	3		8	19	3	5	2
Georgia	1		11	93		13	3
Florida	1	2		93			10
East South Central	**5**	**2**	**21**	**192**	**3**	**80**	**25**
Kentucky			1	55	1	1	2
Tennessee	2	2		53	1		2
Alabama	2			69	1	17	18
Mississippi	1		20	15		62	3
West South Central	**7**	**1**	**31**	**987**	**7**	**222**	**61**
Arkansas	1		9	107		15	2
Louisiana	1		5	13	1	62	13
Oklahoma	2		17	88	1	22	13
Texas	3	1		779	5	123	33
Mountain	**4**		**344**	**547**	**1**	**64**	**13**
Montana			12	94		1	
Idaho				40			
Wyoming				53		3	
Colorado			270	50	1	14	3
New Mexico	1		5	44		26	6
Arizona	3		57	177		20	4
Utah				89			
Nevada							
Pacific	**3**	**1**	**24**	**2,003**	**5**	**42**	**31**
Washington			6	310		2	
Oregon	1		6	339		18	3
California	2	1	12	1,354	5	22	28
Alaska							
Hawaii			6	47			

[1] New York City only.

Reported Cases of Selected Communicable Diseases: United States, Week Ended June 23, 1951—Continued

[Numbers under diseases are International List numbers, 1948 revision]

Area	Rocky Mountain spotted fever (104)	Scarlet fever (050)	Smallpox (084)	Tularemia (059)	Typhoid and paratyphoid fever [1] (040,041)	Whooping cough (056)	Rabies in animals
United States	**16**	**914**	**1**	**17**	**57**	**1297**	**148**
New England		**91**			**4**	**43**	
Maine		7				6	
New Hampshire		[2] 2				3	
Vermont		2				1	
Massachusetts		59			4	21	
Rhode Island		7					
Connecticut		14				12	
Middle Atlantic	**2**	**223**			**11**	**121**	**6**
New York		[2] 126			3	50	4
New Jersey	1	40				33	
Pennsylvania	1	57			8	38	2
East North Central	**1**	**280**		**3**	**6**	**182**	**24**
Ohio		81				33	1
Indiana	1	5			1	31	15
Illinois		40		3	3	17	4
Michigan		134			2	43	4
Wisconsin		20				58	
West North Central		**32**	**1**	**3**	**1**	**76**	**41**
Minnesota		7				10	1
Iowa		8				11	14
Missouri		10	1	3	1	12	23
North Dakota		2				19	
South Dakota		1				3	
Nebraska		1				1	
Kansas		3				20	3
South Atlantic	**9**	**49**			**8**	**157**	**17**
Delaware		1				1	
Maryland	3	13				6	
District of Columbia		3				6	
Virginia	4	3			1	43	8
West Virginia		4			2		
North Carolina	1	17				56	
South Carolina	1					1	5
Georgia		3			5	33	4
Florida		[2] 5				11	
East South Central		**23**		**1**	**8**	**124**	**30**
Kentucky		1			1	71	14
Tennessee		10				22	8
Alabama		5			6	20	6
Mississippi		7		1	1	11	2
West South Central		**15**		**8**	**7**	**399**	**29**
Arkansas				4	1	33	5
Louisiana		2		1	4	2	
Oklahoma		2		2		37	3
Texas		11		1	2	327	21
Mountain	**3**	**26**		**2**	**2**	**117**	
Montana		1				11	
Idaho	1	1				7	
Wyoming	1					5	
Colorado	1	4			1	19	
New Mexico		4				24	
Arizona		3			1	43	
Utah		[2] 13		2		8	
Nevada							
Pacific	**1**	**175**			**10**	**78**	**1**
Washington		11				9	
Oregon	1	7				8	
California		[2] 157			10	61	1
Alaska							
Hawaii							

[1] Including cases reported as salmonellosis. [2] Including cases reported as streptococcal sore throat.

FOREIGN REPORTS

CANADA

Reported Cases of Certain Diseases—Week Ended June 9, 1951

Disease	Total	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Brucellosis	3					1	2				
Chickenpox	1,331	2		45	8	167	780	46	26	77	180
Diphtheria	1					1					
Dysentery, bacillary	3					1	2				
Encephalitis, infectious	3					1			2		
German measles	354			5		39	203		15	32	60
Influenza	20			10	2		2	2			4
Measles	1,587	4		148	2	445	359	37	30	347	215
Meningitis, meningococcal	2	1				1					
Mumps	660	1		35		131	165	26	68	57	177
Poliomyelitis	2						1		1		
Scarlet fever	399	5			1	108	53	36	7	61	128
Tuberculosis (all forms)	215				15	85	36	17	10	18	34
Typhoid and paratyphoid fever	12					4			2	1	5
Venereal diseases:											
Gonorrhea	279	7		7	4	86	45	17	14	35	64
Syphilis	106	1		5	2	61	15	3	8	4	7
Primary	8			1	1	3		1	2		
Secondary	4					4					
Other	94	1		4	1	54	15	2	6	4	7
Whooping cough	128	2				18	50	2	3	19	34

MADAGASCAR

Reported Cases of Certain Diseases and Deaths—April 1951

Disease	Aliens		Natives	
	Cases	Deaths	Cases	Deaths
Bilharziasis			32	
Diphtheria	5	2	12	3
Dysentery:				
Amebic	2		58	1
Bacillary	2		9	
Erysipelas			3	
Influenza	103		8,425	17
Leprosy			17	
Malaria	136	3	23,418	76
Measles	8		84	
Mumps	2		158	
Paratyphoid fever			5	
Plague			18	11
Pneumonia (all forms)	9		374	37
Puerperal infection			4	
Tuberculosis, respiratory	11	2	59	14
Typhoid fever	4		6	
Whooping cough	5		358	10

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

The following reports include only items of unusual incidence or of special interest and the occurrence of these diseases, except yellow fever, in localities which had not recently reported cases. All reports of yellow fever are published currently. A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

India (French). A sharp increase in the incidence of cholera was noted for the week ended June 2, 1951, when 19 cases (5 deaths) were reported compared with 2 for the previous week. During April and May only 4 cases were reported.

Pakistan. During the first 3 weeks of May the incidence of cholera was decreasing. For the week ended May 19, 1951, 534 cases were reported which was less than half the number (1,201) reported for the week ended April 28.

Plague

Brazil. During March four cases (three deaths) of plague were reported in Pacoti County, Ceara State.

Indochina. Two cases each of plague were reported in Baria and Phanthiet, Viet Nam, during the week ended June 9, 1951.

Smallpox

Belgian Congo. During the week ended June 2, 1951, 67 cases of smallpox were reported. Of these, 55 were in Stanleyville Province. For the previous week 17 cases were reported of which 11 occurred in Stanleyville Province.

Korea. Smallpox in Korea seems to be on the decrease. From 153 cases reported in March the incidence declined to 126 for April. However, in the port of Yeosoo where no cases were reported during March, there were 109 cases in April.

Yellow Fever

Gold Coast. One fatal suspected case of yellow fever was reported on May 29, 1951, in Swedru.

AGING, a New Bulletin

Establishment of a new bulletin, AGING, devoted to the field of geriatrics, was announced by the Federal Security Agency during July. According to Clark Tibbitts, Chairman of the Federal Security Agency's Committee on Aging and Geriatrics, AGING will not be issued on any regular schedule.

Requests for copies of the first and subsequent issues should be addressed to the Office of Publications and Reports, Federal Security Agency, Washington 25, D. C.