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—Announcement—

This is the last Tuberculosis Control Issue of PUBLIC HEALTH REPORTS to be published in this format. As announced on the back cover, PUBLIC HEALTH REPORTS will be published monthly beginning in January of 1952. The new journal will include part of the same type of material on tuberculosis control which has been appearing in these special issues; the more technical research papers will be issued in other publications.

We have appreciated the interest in the Tuberculosis Control Issue, which has been shown both by criticism and commendation of the articles published. We hope that this interest will continue to contribute to PUBLIC HEALTH REPORTS in its new format and under its new editorship. The new avenues of publication will be strengthened by the kind of comment which has been helpful to us in the past and by the participation of authors who are active in the many disciplines of tuberculosis control.

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Community-Wide Chest X-ray Survey

V. The Medical Profession

By Paul A. Pamplona, M.D., M.P.H.*

The active participation and leadership of the medical profession are essential in all the steps of a community-wide chest X-ray survey. They are essential in the earliest discussions of whether such a program is to be undertaken, throughout all planning for a survey, and during the period when X-raying is being done. They are essential during the months and years of follow-up. Prevention, diagnosis and treatment of disease and rehabilitation of the patient are the objectives of all medicine—the first aim of the practitioners of this science. Prevention, diagnosis, and treatment of tuberculosis and restoration of the tuberculous patient are the ultimate objectives of a community-wide chest X-ray survey.

Any program designed to find unknown cases of disease has value only if it sets in motion a series of procedures by which the suspected cases of disease thus uncovered are diagnosed and treated. With a communicable disease such as tuberculosis, additional public health value is derived from a screening program, since it brings under medical supervision cases which might otherwise go undiscovered and untreated until the patients' chances of full recovery were lessened and the possibilities of spreading the disease extended. Community-wide case finding for tuberculosis, therefore, offers the physician the opportunity of serving to his fullest measure. He is called upon to diagnose and treat previously unidentified cases. He plays a vital role in preventing the continuing spread of the disease.

During the past 5 years, 17 metropolitan areas have conducted community-wide chest X-ray surveys. In each instance, the three major local groups interested in case finding for tuberculosis—the official health agency, the medical society, and the tuberculosis association—have agreed that a survey would be desirable and have determined the geographic area to be included. Finding their local facilities insufficient for such large and concentrated projects, they have requested help, through their State health departments, from the Public Health Service. The contribution of the Service is in the form of equipment and trained professional and nonprofessional personnel to supplement local facilities (*1*).

The official health agency alone, or even with the assistance of

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the medical society and the tuberculosis association and the Public Health Service, could not carry out the project successfully without active participation of many groups and individuals in the community whose ordinary pursuits are not connected with health. Because a chest X-ray survey is a medical and public health program, however, it is usually originated by the medical profession.

The early considerations which must be covered before the program can begin are in the province of medicine, both clinical and public health. The pattern of tuberculosis in the area—in terms of annual deaths, known cases, cases diagnosed in the advanced stages and cases first reported through death certificates—concerns both the health officer and the clinician. It is this pattern which determines the need for community action. The need is usually readily recognized, but the means for effective action often are not so apparent and must be sought.

Long before a survey begins, a careful review of the resources and facilities is needed to insure a successful case-finding program as well as adequate follow-up. Laboratory service, clinics, hospitals—whether local or State, private or public—as well as medical, nursing, medical social services and other resources in the community are inventoried. This gives the community an opportunity to correct any situations which may hinder the program, by filling in where inadequacies are found, before operations start.

In many communities where there are adequate provisions for the diagnosis and care of known tuberculosis cases, the fear is expressed that existing facilities cannot absorb a case load resulting from a survey. Almost without exception in these areas there are adjustments that can be made which can extend the existing provisions to take care of larger case loads. A recurrent situation in the surveys in which the Public Health Service has had a part has been the lack of sufficient hospital beds for all tuberculosis patients. Whether or not there were hospital beds for all cases found, however, a large number of persons with previously unidentified tuberculosis have been brought under medical supervision at a stage of disease when medical care could be most effective.

Early discussions, evaluations, and decisions which precede the actual undertaking of a survey are carried on informally by doctors who represent the local practicing physicians, local official health agencies, and the Public Health Service. Their association and cooperation continue after the survey has been decided upon and throughout its planning and operation, and many of the medical functions of the survey call for their combined effort. For the purposes of this presentation, however, it seems simpler to discuss medical participation in the survey in three sections, according to the affiliation of the physicians concerned.

Local Practicing Physicians

The organization which is set up to operate the survey has always included, as one of its three major sections (*1*), a group representing the professions directly concerned with tuberculosis control: physicians, nurses, and medical social workers. Nursing and medical social work in community-wide chest X-ray surveys have been discussed in previous papers (*2*, *3*) and will be mentioned here only as they relate to the work of the medical profession.

The medical society is one of the sponsors of a community-wide survey. The president of the society, or the chairman of its public health or tuberculosis committee, as the case may be, is often the physician who takes part in preliminary work with other sponsors in forming an organization. He or another physician representing the medical association usually serves as temporary chairman of the medical committee and calls upon other doctors to participate as members of the committee. When this group has been brought together, permanent chairmen for the committee and subcommittees are elected.

Members of the survey medical committee include general practitioners, as well as specialists in the various fields directly concerned: radiologists, internists, specialists in diseases of the chest, chest surgery, heart disease, and cancer. Before definite plans take shape, the initial planners of the survey must decide what types of screening will be undertaken, and what follow-up will be done for suspected cardiovascular abnormality and other diseases of the chest, as well as for tuberculosis. Upon these decisions will depend, to a certain extent, the composition of the medical committee. The health department places first emphasis on the follow-up of tuberculosis because of its communicability. The extent of follow-up work which can be provided for diseases other than tuberculosis will depend upon the policies and facilities of this agency.

The health officer and the physician in charge of tuberculosis control, as well as the Public Health Service medical officer, have a definite contribution to make as members of the medical committee, so that decisions can be made with full consideration of how they will affect and be affected by the established programs. When, for instance, the committee discusses follow-up services for persons whose X-rays show suggested cardiovascular disease, the health officer and his staff can plan with the committee for the extent and kind of public health nursing service that can be used, the clinic facilities that can be made available, and other pertinent information. The Public Health Service medical officer can be of valuable assistance to the committee since he can describe the variety of methods used in other cities in similar situations. For example, in one survey, cardiovascular suspects were telephoned by a public health nurse and

advised to check with their physicians; in another, they were recalled for a second 70-mm. chest film and a short epidemiological history was taken by a public health nurse, before referral for medical care; and in still another, they were recalled for the history only and then referred to their physicians. The reasons which prompted the adoption of the different policies and the implications of each in terms of cases detected and work involved are discussed with the committee.

While the medical committee operates as a single group in matters of over-all policy, its province in the survey is so large that division of activities among a number of smaller groups is required. There is usually a group concerned with management and disposition of suspects, another with film interpretation and consultation, and a third with medical information.

Management and Disposition of Suspects

The considerations of this committee have to do with (1) criteria for 70-mm. and 14″ x 17″ chest film interpretation; (2) procedures to be followed when suspects are recalled; (3) recommendations for the management of survey suspects referred to physicians.

The 70-mm. chest X-ray films taken in a survey are read by Public Health Service medical officers and classified as essentially negative, tuberculosis suspect, nontuberculous chest disease suspect, cardiovascular disease suspect, or technically unsatisfactory film. The criteria for the interpretation of 70-mm. chest fluorograms and 14″ x 17″ confirmatory films are standards based on accepted medical principles. The physicians on the committee on management have found it helpful to use classifications and standards as stated in other surveys with only minor variations adapted to local situations. The 70-mm. chest films are interpreted in accordance with these recommendations.

The following list is quoted directly from the medical brochure of the Contra Costa County (California) chest X-ray survey:

I. Persons with the following thoracic and pulmonary abnormalities should be recalled:

A., B. Tuberculosis and nontuberculous chest diseases suspects:

1. All areas of increased pulmonary density in the lung parenchyma regardless of shape, size or location, with the exception of small calcified nodules such as are associated with primary infection tuberculosis.
2. Cystic lung lesions including single and multiple tension cysts, extensive bullous emphysema, or localized obstructive emphysema.
3. Abnormally prominent interstitial lung markings.
4. Plural fluid or pneumothorax.
5. Any significant elevation of the diaphragm or suggested evidence of hernia.
6. Single or multiple destructive lesions of the thoracic bones, unhealed fractured ribs, clavicle, etc.

7. All suspected mediastinal tumors including uncalcified hilar lymphadenopathy.
8. Kyphosis of a degree that raises the suspicion of destructive lesions of the vertebrae, or cardiac embarrassment.

C. Cardiovascular diseases suspects:

1. Recall of cardiovascular diseases suspects should be conservative and at the discretion of the film reader.

D. Unsatisfactory films:

1. Mechanical or technical failure; unsatisfactory screening film.
2. Artifact. Shadows due to extraneous objects that either obscure the chest or cannot be readily differentiated from a definite chest abnormality. Persons with unsatisfactory films of one kind or another are referred for another 70-mm. or 14″ x 17″ if necessary.

II. Persons with the following findings, although not necessarily normal, need not be recalled.

A., B. Tuberculosis and nontuberculous chest diseases suspects:

1. Calcified nodules as are commonly seen in healed primary infection tuberculosis, discrete scattered calcification as found in healed histoplasmosis or other fungus infections.
2. Prominent interstitial lung markings as are consistent with the person's size and age.
3. Evidence of definitely healed pleural changes such as apical caps, blunting of the costophrenic angle (except in young individuals), and evidence of old empyema where no recent active process is suspected.
4. Minor irregularities and so-called diaphragmatic adhesions.
5. Congenital abnormalities of the bony thorax such as bifid ribs, cervical ribs, etc., healed fractured ribs or clavicle.
6. Calcified hilar or tracheobronchial nodes; calcified lobe of thyroid or areas of discrete calcification in the neck.
7. Kyphosis and scoliosis, provided there is no suspicion of bony destruction or cardiac embarrassment.
8. Metallic foreign bodies, uncomplicated.

With one exception [1] medical committees have always recommended that persons whose 70-mm. X-ray readings fall in the A and B group (tuberculosis and nontuberculous chest diseases suspects) be recalled to a retake center for a 14″ x 17″ film and an interview with a public health nurse. The nurse takes a short epidemiological history and obtains information, including the name of the family physician, for use in subsequent follow-up if that becomes necessary. At this time the nurse explains that the reading of the X-ray screening film does not constitute a diagnosis, and prepares the person she is interviewing for any later steps he may need to take, stressing the importance of following through with recommendations. If the person does not have a private physician but wants private medical care, the nurse advises

[1] In Denver, the medical committee and all concerned agreed that it would be better to have all suspected cases routed through a central clinic first, and then referred to the private physician.

him to call the local medical association for help in selecting a physician. He is given a postcard to be returned to survey headquarters giving his physician's name when he has decided on one, so that the report of the X-ray interpretation can be sent to the doctor.

There are always cases in every survey which need special attention, and the committees have established policies to meet these emergencies. For example, in one survey the shadows observed on one of the 70-mm. screening films suggested the possibility of the presence of bronchogenic carcinoma. The physician who read the film notified the records department so that an immediate appointment could be made for a 14″ x 17″ film at the retake center. This confirmatory film was taken, developed, and interpreted as quickly as possible. The earlier suspicion was verified, and because of the urgency of ruling out or establishing a diagnosis of cancer of the lung, the film reader telephoned the physician the patient had named. A messenger was dispatched with the 14″ x 17″ film and the survey epidemiological history and film interpretation. These were in the office of the physician within an hour or so following the telephone conversation. Under usual circumstances, a notification would have been mailed to the person, advising him to consult his physician. In this instance, however, the private physician decided that he would assume the responsibility of getting in touch with the patient immediately so that diagnosis could be established without delay.

The promptness with which this matter was handled was later reported to be in all probability a real factor in saving the patient's life. When the physician telephoned him to urge an immediate check-up, he learned that the patient was planning to leave the following day for a month's vacation. After interpretation, the patient was prevailed upon to postpone his vacation. The diagnosis of bronchogenic carcinoma was made, the patient hospitalized, and surgery performed. It was only a matter of a few days from the time this individual had a 70-mm. survey film to the establishment of diagnosis and subsequent surgery. Before this particular survey ended, he had recovered and was back on his job.

The disposition of suspects after they have had 14″ x 17″ confirmatory films at the retake center has been planned in each survey area according to the particular local pattern of medical practices and facilities. Ordinarily, tuberculosis suspects have been referred to their own physicians for diagnosis or to the health department clinic if they were unable to pay a physician. In Minneapolis, where diagnostic service was available in the health department clinic on a very liberal basis, the medical committee adopted a policy whereby all persons whose 14″ x 17″ films indicated need for futher study could be referred to the clinic without regard to economic status if they so desired. Even under these circumstances, only 30 percent of the per-

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sons referred for diagnosis went to the clinic. The remaining 70 percent chose to go to private physicians. As mentioned before, in Denver a special diagnostic clinic was established as a part of the survey. There was no retake center as such, and all persons whose 70-mm. films suggested tuberculosis were referred to the diagnostic center where 14″ x 17″ films were taken, and in addition, bacteriological examinations, tuberculin tests, physical examinations and such other measures as were necessary to establish at least a presumptive diagnosis were taken before patients were referred to their own physicians (*4*).

Decisions about practices which may affect the ordinary follow-up procedure of the official health agency must be worked out with the health officer. For example, the medical committee, in order to instruct patients and their families in isolation techniques and in following physicians' directions, may recommend an increase in the use of public health nursing services by the private physicians. This service is available from the health department to all tuberculosis patients and their families, but frequently it is not used to its fullest extent. If the medical committee takes the initiative in advising wider use of public health nursing services, the health officer and his staff will have to determine whether nursing personnel is adequate to undertake the additional load. The committee can then bring this service to the attention of the medical association, so that all physicians in the community can be informed about it.

In large metropolitan centers, the facilities and resources of the health department are often not used by general practitioners to the same extent as they are in smaller communities. Repeatedly, surveys have stimulated physicians to use the official health agency services far more than they were accustomed to doing before, because there is a better understanding and acceptance of the role this agency can play in assisting them by providing services to patients. Once a need is demonstrated, inadequacies in services are more likely to be corrected, especially when there is support from physicians in private practice. There have been instances in which more public health nurses have been added to the staff, medical social services have been developed or reorganized, laboratory services have been enlarged, or case register procedures revised and streamlined.

The committee on management has often assembled in the form of a booklet the accepted recommendations for good practice in the diagnosis and treatment of tuberculosis and other diseases receiving special consideration in the particular survey. These booklets have been distributed to all physicians in the community, so that they could have the benefit of the thinking of members of the committee. One recommendation which has always been included is that all tuberculosis suspects should be classified according to the standards

set forth by the National Tuberculosis Association.[2] The need for a complete physical examination, sputum and tuberculin tests, differential diagnosis, especially with regard to neoplasm, is reviewed in this booklet, making it useful to the physician as a reference. Epidemiological information is often included, and good public health practice in the management of suspected tuberculosis has been stressed as being exceedingly important.

As was pointed out earlier, plans for follow-up of cardiovascular and nontuberculous chest disease suspects must be carefully developed by the medical committee. In cities where there are heart and cancer associations, these groups have always been invited to participate with the survey medical committee in planning for diagnosis and care of cardiovascular and nontuberculous suspects. Those persons who have a private physician are referred back to him. For those who cannot afford private medical care, and experience has shown this to be 20 to 30 percent of the total number of all suspects, the medical committee often determines a way for diagnosis and treatment to be provided. If there are public heart disease and cancer clinics in the community, there is no problem. If there are not, out-patient departments of hospitals, clinics, and other diagnostic services in the community should be made aware of the fact that the screening program will produce a certain increase in the number of persons who will need their services. Members of the medical committee take an active part in working with the clinics to develop practical plans for referral of survey suspects.

All survey suspects referred to a doctor's office or a clinic for diagnosis and treatment should receive such service and should be followed as long as necessary. This involves several activities on the part of the patient and others: (1) Getting the patient to the physician, (2) interpreting the necessary diagnostic procedures in ways that he will understand and accept, (3) having available the necessary specialized knowledge and resources at the doctor's office or some other diagnostic facility, (4) keeping the patient under observation and following the recommended procedures as his particular condition requires, (5) effecting any adjustments in his social situation which will enable him to follow through on the diagnostic procedure.

The official health agency, through its nursing division, has means of assisting the medical profession in following through with tuberculosis suspects to see that they are placed under medical care. In many cities, however, because of the shortage of nursing staff, it is not possible for the health officer to provide the same type of nursing

[2] National Tuberculosis Association: Diagnostic Standards and Classification of Tuberculosis, 1950. Because of the recommendations of this committee, the film readers, in recording their interpretations, frequently indicate their impression of the type and extent of the disease, and when possible, the probable activity of the process.

follow-up work for cardiovascular and nontuberculous chest diseases suspects. When that is the case, the medical committee takes the responsibility for finding other resources in the community which can be drawn upon for this service. In a California community, funds were made available through the Division of Chronic Disease of the State Department of Public Health so that extra nurses could be employed to do this type of follow-up work. In Boston, the cancer society made an appropriation for follow-up of neoplasm suspects. Heart associations in other areas have made similar grants.

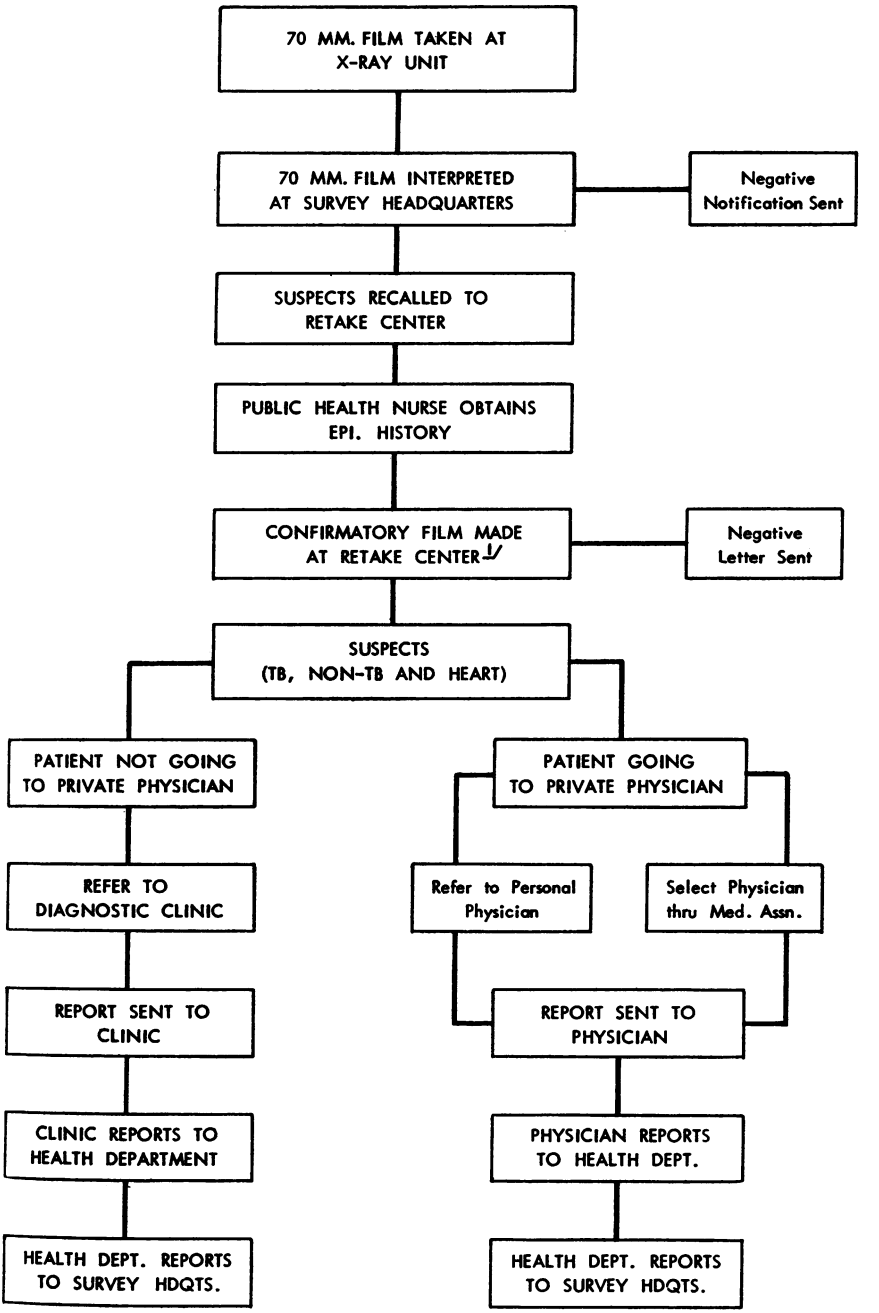
When patients are referred to a private physician or diagnostic clinic, reports of the X-ray interpretation are sent to the doctor in advance of notification to the patient recommending that he visit his doctor. If the notification to the patient is mailed at the same time the report is sent to the doctor, in many instances the patient would visit his doctor before the X-ray interpretation had arrived. All reports are based solely on survey film impressions and should not be construed as definite diagnoses. The confirmation or denial of the survey film interpreter's impression is ascertained at the physician's office or clinic. The 14″ x 17″ confirmatory X-ray film is available to the physician upon request. Whether it is temporarily loaned or given to the doctor to keep depends upon local policy.

Local medical committees have always advised that physicians send reports on all referrals to the health department as soon as diagnosis is made. This is routinely done for tuberculosis, but in a survey of this kind it is important that diagnoses of other chest diseases and cardiovascular conditions also be reported so that survey records can be closed. The health department shares necessary statistical information with the survey medical group if studies are to be made. It has been the policy for all records and X-ray films to be turned over to the official health agency when the survey is over.

Figure 1 is a typical flow chart which illustrates the steps from the time the 70-mm. chest X-ray film is taken at an X-ray unit to the time a diagnosis is reached.

Film Interpretation and Consultation

This committee has functioned as a consultation group, contributing their judgment to the interpretation of 14″ x 17″ confirmatory chest films. The committee is usually a large one, made up of radiologists, phthisiologists, surgeons especially interested in diseases of the chest, internists, and general practitioners. In order to carry out its continuing work through the period when films are being taken it has been found necessary for the committee to be organized into a number of panels. A radiologist, a tuberculosis specialist, and another physician, for instance, might constitute a panel, although the makeup of the panels varies from community to community. Panel meetings



1/ 14" x 17" confirmatory film not made on cardiovascular suspects.

Figure 1. Diagram showing disposition of suspects. Charts similar to this have been used in most of the booklets prepared by survey medical committees for distribution to practicing physicians.

are scheduled for once or twice a week, and the several panels are rotated, to avoid too heavy a demand on any one physician's time.

It has been customary to present all 14″ x 17″ confirmatory chest films to a panel at the outset of film reading. This practice, however, has almost always changed after a few panel meetings, and the doctors have requested that only certain films—those which present difficult diagnostic problems, special or unusual cases—be brought to their attention.

All physicians in the community have been invited to film interpretation panel meetings, whether they were serving officially or not. As a rule, the first meetings are attended only by the physicians scheduled, but interest in the work quickly mounts. Soon the attendance is swelled not only by doctors who come to sessions other than those on which they serve officially, but by colleagues who have heard about the panel discussions, and come for the opportunity offered. Physicians have often expressed appreciation of this chance to see many interesting films and to discuss them with other doctors. In a short period of time they can see and discuss a number of X-rays of unusual conditions which they might not otherwise encounter in years of practice. This is particularly the case for physicians who are not practicing in radiology or chest disease.

Medical Information

In many communities this committee has been the one responsible (1) for interpreting the survey to the medical profession and keeping them informed of its progress, (2) for stimulating physicians to take active part as members of a large number of community organization committees, (3) for disseminating the information assembled by the professional services division to all physicians in the community, and (4) for providing general approval of public information and publicity materials. Some members of this committee have been doctors who have experience in the field of public information and writing: in Boston, the editor of the New England Journal of Medicine; in Cleveland, a physician who writes a respected health column in a daily newspaper.

While it would not of course be feasible for every piece of survey publicity material to be cleared by the committee, they do set over-all policy at the beginning and indicate the general tone of survey messages. After that, the publicity workers check material with the Public Health Service medical officer who is responsible for making sure that statements are medically correct and acceptable to the medical committee. If there is need of clearance for specific items the medical officer brings them to the attention of the committee.

Interpretation of the survey to physicians in the community is directly the responsibility of the committee on information. Practices

vary in different cities, but a usual first step is a letter to all doctors practicing in the community, explaining the purposes of the program and the participation of private physicians with other groups in carrying out these purposes. To keep members of the medical profession informed and foster their interest, newsletters or progress reports are usually sent to them periodically throughout the survey, and articles about tuberculosis and the case-finding program are prepared for the medical society bulletin.

One of the most effective ways of enlisting the support and interest of a great many physicians is through the personal contacts of all physicians who work directly with the survey. They are able to reach a great number of their colleagues in meetings of hospital staffs, chapters of the medical society, and specialty societies, as well as in their daily contacts. Tuberculosis institutes for physicians, at which recognized local and national authorities have presented papers on various aspects of tuberculosis diagnosis and therapy, have been conducted in connection with some surveys.

The booklet or reference file for physicians, described above, is edited and distributed by the information committee. The work of all sections of the survey professional services division is described, nursing and social work as well as medical. The various forms used in referring suspects for follow-up may be printed in the booklet, so that physicians will be familiar with them. When it is prepared early and distributed as soon as 70-mm. operations begin, the medical booklet has proved more useful in giving the medical profession full information for reference in caring for patients referred to them by the survey.

After survey policies have been determined, the medical information committee reviews the form letters which will be sent to physicians transmitting reports of X-ray interpretations, as well as letters recalling individuals for 14″ x 17″ films. Great care has been taken in the wording of these letters to avoid apprehension on the part of persons receiving them.

The medical profession in each community where the Public Health Service has participated in a chest X-ray survey has exhibited intense interest in the project as well as in the problems of carrying through the activities the survey sets in motion. They have given generously and enthusiastically of their time, energy, and professional knowledge, to make the surveys a substantial contribution to the health of their communities.

The Official Health Agency

A successful community-wide chest X-ray survey requires the active leadership of the local health officer. In this intensification of tuberculosis case finding, the health officer and the tuberculosis control officer have an important role. They are responsible to the community

for control of tuberculosis, and they have the fullest knowledge of the resources in the community for combating the disease. The procedures to be observed in providing public health follow-up to tuberculosis suspects discovered in the survey are the same as they would be for suspects discovered in any other way. Although no major changes are made in health department functions during the survey, the practicability of adjustments to take care of a temporarily increased case load must be determined by the health officer.

The health department is one of the sponsors of the survey, and the health officer begins his planning long before the first X-ray is taken. On the basis of figures from other surveys, the Public Health Service medical officer is able to help him estimate the number of suspects the survey will find. Working from that estimate, he considers how to plan for medical and public health nursing service, clinic, and laboratory facilities, so they will be available as they are needed.

A certain proportion of tuberculosis patients discovered in the survey will require continued public health nursing services, and arrangements may have to be made to provide for an increased number of nursing visits. The health officer and the nursing director are in the best position to determine what can be done in these areas (*2*).

Experience in past surveys has shown that 20 to 30 percent of the suspects will be referred to the health department clinic. Of these, a considerable number will need only one visit to the clinic, with annual or semiannual supervision thereafter. The number of clinic hours per week will probably have to be increased and staff for the clinic sessions expanded for a period which will depend upon the case load resulting from the screening. To augment the clinic medical staff, the health officer can frequently get help from the medical committee of the survey in arranging for physicians to serve in the clinic at minimum fees or without pay.

In surveying laboratory facilities, the needs of both the clinic and the private physician are considered, as well as the question of whether private laboratories will be able to handle all bacteriological studies for private physicians' cases or not. Temporary changes in health department laboratory work and more extensive use of State laboratories are solutions that have been found possible in some survey cities.

Revision of the records system as it relates to tuberculosis activities and of the tuberculosis case register itself are often necessary for a survey (*5*). In many areas a more effective system has been initiated as a result of evaluation and improvement of records procedures.

Many official health agencies also have available in their departments the professional services of health educators and medical social workers. It is easy to envision the role that health educators play in a program of this kind, since success is largely dependent upon

the extent of community participation, which can be secured only through thorough organization and intensive education. In most communities the health officers have assigned the members of their health education staff to work fulltime with the survey. The need for this type of service cannot be overemphasized.

The contribution of medical social workers is also important. Many health departments still do not have medical social services for their patients and communities. In several areas where surveys were conducted, however, a genuine effort has been made by the official health agency to secure the services of medical social workers; in others, where such services were available, their integration with the case-finding program was a reality. With two exceptions health departments in survey areas have been able to establish or enlarge their social service facilities, once the need for social service work was demonstrated during the survey.

Although in many places the tuberculosis sanatoria are not directly under the jurisdiction of the health department, the health officer is of course concerned with the problem of beds for tuberculosis patients. Here, too, he works closely with the medical committee of the survey, as well as with the medical society and sanatorium authorities, in trying to arrange for hospitalization for patients who need it. In some instances, additional tuberculosis beds have been made available, or staff has been obtained so that beds not in use could be reopened. Revision of sanatorium admission policies may result in better selection of patients for hospitalization and increase the effectiveness of the sanatorium in tuberculosis control.

During the actual survey operation, the health officer gives continuous leadership. As a participant and an advisor, he works closely with the medical committee on common problems. He explains and interprets public health and tuberculosis control and is able to enlist new support from the medical profession for many of his activities. Health officers have found that surveys, with their accompanying focus of the whole community on a health problem, have brought increased interest, understanding, and support of the health department and of public health in the community.

Public Health Service Medical Officers

The Public Health Service medical officer in charge of a community-wide chest X-ray survey team has three major areas of responsibility. He is a consultant to the local official health agency and to other persons and organizations in the community in matters pertaining to the survey; he is a member of the survey organization medical committee, and the representative of the Public Health Service in the over-all survey organization; and he is the executive officer of the

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personnel from the Division of Chronic Disease and Tuberculosis in the area doing survey work.

As a consultant, the medical officer can play an important role in the initial planning for the survey, working with the health officer, the tuberculosis control officer, representatives of the medical society and the tuberculosis association, and others concerned with preparations for the program. He can describe in detail the general pattern of community-wide chest X-ray surveys as it has taken form in other places and explain the nature and extent of Public Health Service participation.

The committee can draw upon the experience accumulated by the medical officer in evaluating community resources and estimating needs. For example, the distribution of findings in various communities has shown a marked consistency which allows the planning group a basis for making reasonable estimates of the number of suspects that will be found (fig. 2).

When specific problems are considered, the medical officer is able to describe not only the way other areas have solved them, but also the settings in which those solutions were practical, so that the health officer and others have a good basis upon which to judge their practicability in the particular jurisdiction. If consultation in other professional areas, such as nursing or medical social work or records systems, is requested by the local authorities in connection with the survey, the medical officer can usually arrange to make this available.

While the survey is in operation, the Public Health Service medical officer is at survey headquarters and acts as liaison between the survey staff and both the health department and the medical committee. His constant and close association with the health officer insures effective integration of survey activities with established public health practice in the community.

As a member of the official survey organization, the medical officer not only represents the Public Health Service, which is one of the survey's sponsors, but is able to bring directly to the attention of the survey governing body problems which require immediate action.

All of the Public Health Service personnel working on a survey, including consultants from the Division of Chronic Disease and Tuberculosis who may have been in the community for considerable periods before the survey, are responsible to the medical officer in charge. As the executive officer of the team the medical officer coordinates the work of the consultants and is the person through whom all arrangements between the division or its personnel are made with local agencies or groups.

A Public Health Service survey team for 18 small film units usually includes four physicians in addition to the medical officer in charge. These doctors have had special training in survey film

TOTAL NUMBER OF 70 MM. X-RAYS TAKEN . . .	100,000	
NEGATIVE 70 MM. FILMS	96,000	
PERSONS WHO WILL NEED FURTHER STUDY (4% OF TOTAL X-RAYED)	4,000	4,000
CARDIOVASCULAR SUSPECTS [1] (0.5% OF TOTAL X-RAYED)	500	
PERSONS TO BE RECALLED FOR 14" x 17" FILMS	3,500	3,500
NEGATIVE 14" x 17" FILMS (30% OF TOTAL 14" x 17")	1,050	
PERSONS WHO WILL NEED FURTHER STUDY (70% OF TOTAL 14" x 17")	2,450	2,450
TUBERCULOSIS SUSPECTS (70% OF POSITIVE 14" x 17")	1,715	
NONTUBERCULOUS CHEST DISEASE SUSPECTS (30% OF POSITIVE 14" x 17")	735	

[1] It has been the recommended practice not to give 14" x 17" chest films to cardiovascular suspects.

Figure 2. Formula for estimating findings in community-wide chest X-ray survey. The percentages used above have been repeatedly observed, with slight variations, in the surveys in which the Public Health Service has participated.

interpretation and they are fully acquainted in each survey with the recommendations of the local medical committee. For purposes of uniformity and expedience a "reading code" has been established and is used by all film readers. This film interpretation code-index allows the physicians reading the photofluorograms to enter on the X-ray identification card a number which expresses the reader's impression and will be translated in the records department. The various types of pathological conditions have been grouped together according to anatomical or systemic entities in a fashion which makes it possible to cover practically all needs of survey film reading. If, for instance, the doctor enters in the record the following figures: 925, L. U.—601, the code is translated by specially trained personnel in the records department to read as follows: "Pulmonary tuberculosis; reinfection type with single cavitation in left upper lobe; calcified mediastinal nodes present." Such a reading, sometimes enlarged upon by the interpreters, is fairly typical of the information which is sent to the physician named by the individual.

If survey production is consistently higher than expected, extra film reading personnel may be requested from the Public Health Service or secured locally. To expedite the work at periods of peak activity, local health department physicians have helped with film reading in some of the larger surveys.

The film reading room is usually the meeting place of the panels of doctors on the film interpretation committee and a list of notable films, with corresponding probable diagnoses, is maintained so that panel members and other physicians can have easy access to them. There is always considerable interest in the reading room and its operations. On some occasions, visiting physicians from foreign countries have spent days or weeks observing the techniques of film reading and it is usual to have medical visitors from outside the community stop in. In one survey, a State radiologist came in to use survey films to train some of his own staff doctors. On frequent occasions a radiologist from the Division of Chronic Disease and Tuberculosis of the Public Health Service visits the X-ray team to consult with the film readers.

* * * * * * *

The "physician" in a tuberculosis survey is not a single person. He represents the accumulated knowledge and experience of many—the private practitioner, the health officer, the public health officer, the sanatorium director, the film interpreter. A private practitioner who played an active role in one of the surveys said in an article addressed to his colleagues, "You are the key to the success of the present program and the guarantee that in the future the ground gained in the fight against tuberculosis will not be lost."

ACKNOWLEDGMENT

The author wishes to express his appreciation to all of the physicians with whom the Public Health Service has had the privilege of working in chest X-ray surveys—the private physicians, the health officers and other public health physicians, the sanatorium directors, the officers and members of medical societies. It is from their experience, as well as his own, that this paper was written.

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Community-Wide Chest X-ray Survey,

VI. Records and Reports

By Philip E. Enterline, B.B.A. and Herbert L. Sauer, A.B.*

A community-wide survey is soon to begin. Large numbers of people will be interviewed, X-rayed, recalled for further interviews, further X-rays. Hundreds of letters must be written, records systems reviewed, new systems devised and maintained, personnel needs determined. Pertinent facts about the people in the community, age distribution, predominant racial groups, degree of industrialization, are needed. The personnel available, the records now in use, the follow-up procedures, all must be analyzed and coordinated with new needs arising from this mass survey.

The Health Department Records Consultant

The local health department is often able to adapt its records procedures to meet many of the new needs. But if assistance is needed, upon request made through the State health department, the United States Public Health Service is usually able to help by assigning a records consultant. This consultant, who usually joins the local staff several months before the survey starts, can help the health department prepare the tuberculosis case register for the increased load which will result from the survey. The consultant can also assist in developing any special procedures that will be needed for the follow-up of persons shown by the X-ray survey to have evidence of possible tuberculosis.

Survey Records Supervisor

Several weeks before the survey starts, the Public Health Service assigns a records supervisor directly to the survey organization. This person serves as chief of the records unit for which he recruits, trains, and supervises the clerical personnel needed to carry out the unit's duties. These duties mainly are to process all survey records and to send notifications to participants, and X-ray results to physicians and, if tuberculosis is suspected, to the health department. The records consultant also assists in designing survey form letters, helps develop records of follow-up procedures for suspected chest abnormalities other than tuberculosis, and also helps develop case-referral procedures for chest abnormalities including tuberculosis.

*Public Health Advisor Specialists, Division of Chronic Disease and Tuberculosis.

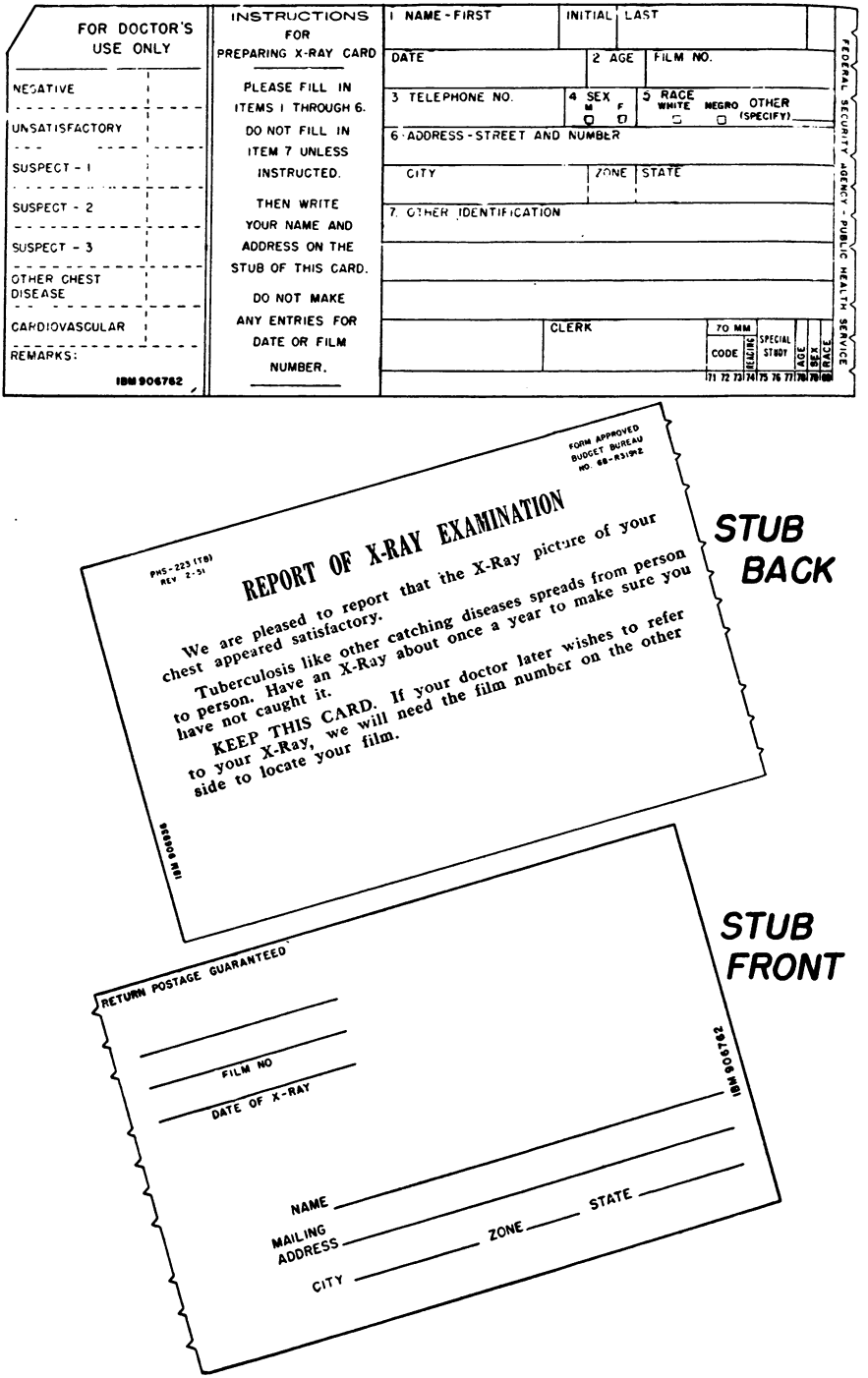


Figure 1. X-ray card used at the time the 70-mm. film is taken.

Radio, television, newspapers, pamphlets, posters have alerted the community, the survey staff is ready, the record forms are in order, the X-ray machines are set: the survey begins.

The 70-mm. X-ray

As each person approaches the screening unit he is met by a clerk who writes in identifying information, items 1–6, on the X-ray card. (See fig. 1.) (These cards are supplied by the Public Health Service if desired.) If the X-rays are being taken of a group of persons, such as those in a school or factory, the participants may be asked to fill out their own cards. An effort is made to avoid any questions which may discourage people from participating in the survey.

In some instances, entries may also be made under item 7—"other identification." For example, if the person being X-rayed is required by law to take an annual chest X-ray this can be noted, and later a report can be made available to the health department so that the survey film may be used as the required X-ray.

The participant next hands the completed card to the X-ray technician who stamps on both the card and stub a seven-digit number of which the first two digits refer to the X-ray unit, the last five to the individual X-ray film. This enables each X-ray unit to have its own series of numbers, thus preventing duplication of any film number.

The card is then inserted in the "photo identifier" of the X-ray machine in order to photograph on the film the subject's last name, age, sex, race, and film number. This not only provides positive identification, but allows the film reader to consider pertinent data, when evaluating the film, without referring to the X-ray card. The X-ray is then taken.

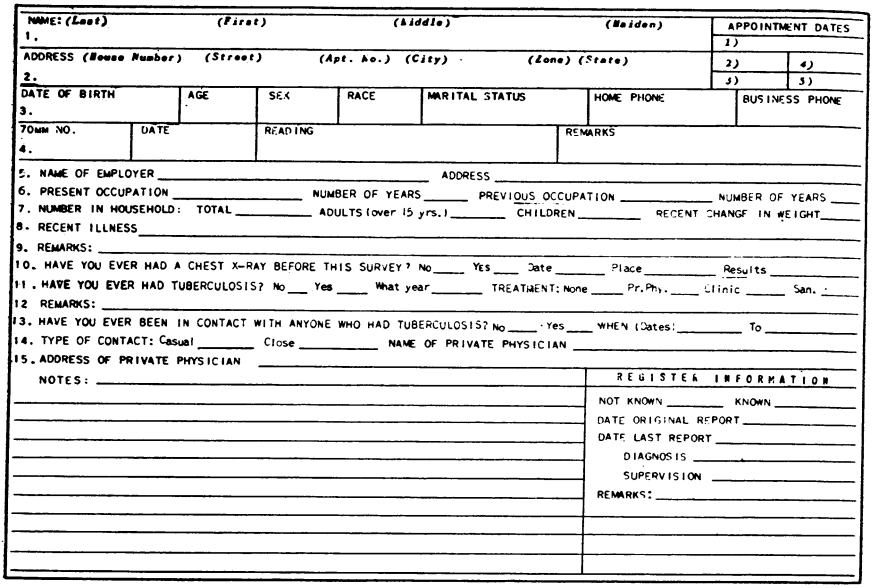
Notifying Participants of the Results

After the rolls of film are developed, they are matched with the X-ray cards. Both cards and film are then sent to the film reading room where a physician reads the films and enters his impressions on the cards. The stubs of the X-ray cards (fig. 1) are mailed to notify those whose small films are negative. Those whose X-rays are technically unsatisfactory, either because they moved during the X-ray exposure, or because of mechanical failure of the machine, are asked by post card to have another film taken at any of the survey units. Those persons whose small films suggest positive findings and the need for further study, receive a personal letter notifying them of an appointment at the survey retake center.

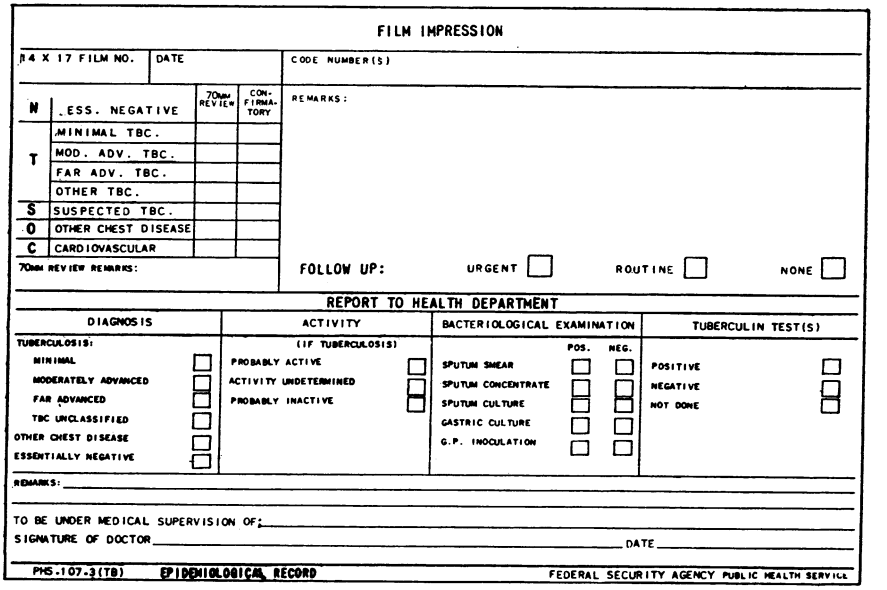
Epidemiological Record and 14" x 17" Confirmatory Film

An epidemiological record (fig. 2) is initiated for persons for whom

an appointment is made at the retake center. Lines 1–4 of the record are filled in from the original X-ray card, the appointment date is entered, and the card is then filed alphabetically and by appointment date at the retake center. A somewhat different record is usually


1. NAME: (Last) (First) (Middle) (Maiden) — APPOINTMENT DATES 1)
2. ADDRESS (House Number) (Street) (Apt. No.) (City) (Zone) (State) — 2) 4) 3) 5)
3. DATE OF BIRTH | AGE | SEX | RACE | MARITAL STATUS | HOME PHONE | BUSINESS PHONE
4. 70MM NO. | DATE | READING | REMARKS
5. NAME OF EMPLOYER _____ ADDRESS _____
6. PRESENT OCCUPATION _____ NUMBER OF YEARS _____ PREVIOUS OCCUPATION _____ NUMBER OF YEARS ___
7. NUMBER IN HOUSEHOLD: TOTAL _____ ADULTS (over 15 yrs.) _____ CHILDREN _____ RECENT CHANGE IN WEIGHT ___
8. RECENT ILLNESS _____
9. REMARKS: _____
10. HAVE YOU EVER HAD A CHEST X-RAY BEFORE THIS SURVEY? No ___ Yes ___ Date _____ Place _____ Results _____
11. HAVE YOU EVER HAD TUBERCULOSIS? No ___ Yes ___ What year _____ TREATMENT: None ___ Pr. Phy. ___ Clinic ___ San. ___
12. REMARKS: _____
13. HAVE YOU EVER BEEN IN CONTACT WITH ANYONE WHO HAD TUBERCULOSIS? No ___ Yes ___ WHEN (Dates): _____ To _____
14. TYPE OF CONTACT: Casual _____ Close _____ NAME OF PRIVATE PHYSICIAN _____
15. ADDRESS OF PRIVATE PHYSICIAN _____
NOTES:
REGISTER INFORMATION
NOT KNOWN ___ KNOWN ___
DATE ORIGINAL REPORT _____
DATE LAST REPORT _____
DIAGNOSIS _____
SUPERVISION _____
REMARKS: _____

FRONT


FILM IMPRESSION
14 X 17 FILM NO. | DATE | CODE NUMBER(S)

		70MM REVIEW	CONFIRMATORY
N	LESS. NEGATIVE		
T	MINIMAL TBC.		
T	MOD. ADV. TBC.		
T	FAR ADV. TBC.		
T	OTHER TBC.		
S	SUSPECTED TBC.		
O	OTHER CHEST DISEASE		
C	CARDIOVASCULAR		

REMARKS:
70MM REVIEW REMARKS:
FOLLOW UP: URGENT ☐ ROUTINE ☐ NONE ☐

REPORT TO HEALTH DEPARTMENT

DIAGNOSIS	ACTIVITY (IF TUBERCULOSIS)	BACTERIOLOGICAL EXAMINATION	POS.	NEG.	TUBERCULIN TEST(S)
TUBERCULOSIS:					
MINIMAL ☐	PROBABLY ACTIVE ☐	SPUTUM SMEAR	☐	☐	POSITIVE ☐
MODERATELY ADVANCED ☐	ACTIVITY UNDETERMINED ☐	SPUTUM CONCENTRATE	☐	☐	NEGATIVE ☐
FAR ADVANCED ☐	PROBABLY INACTIVE ☐	SPUTUM CULTURE	☐	☐	NOT DONE ☐
TBC UNCLASSIFIED ☐		GASTRIC CULTURE	☐	☐	
OTHER CHEST DISEASE ☐		G.P. INOCULATION	☐	☐	
ESSENTIALLY NEGATIVE ☐					

REMARKS: _____
TO BE UNDER MEDICAL SUPERVISION OF: _____
SIGNATURE OF DOCTOR _____ DATE _____
PHS-107-3(TB) EPIDEMIOLOGICAL RECORD FEDERAL SECURITY AGENCY PUBLIC HEALTH SERVICE

BACK

Figure 2. Epidemiological record (suspected tuberculosis).

used if the participant is being checked for a suspected abnormality other than tuberculosis. (See cardiac record, fig. 3.)

When the person reports to the retake center, (1) his epidemiological record is pulled from the files by the receptionist, (2) he is interviewed by a public health nurse who answers any questions he may have and completes lines 3 and 5–15 of the record, and (3) a 14″ x 17″ chest film is taken. This second film is identified by the same number as that used on the small film.

After the 14″ x 17″ film is developed, it is matched with the corresponding epidemiological record and is sent to the film reading room. The film impression is entered on the record in a three digit code which eliminates the need for writing long and recurring film impressions, and makes for ease in later transcribing the film reading to other records.[1]

Appropriate letters are mailed to those persons whose confirmatory X-rays are either negative or show shadows of apparently no clinical significance.

For all persons suspected of having tuberculosis, including those who did not have a confirmatory film taken, the epidemiological records are sent to the health department to be checked against the tuberculosis case register. (When the volume of work permits, this check is preferably made before the 14″ x 17″ film is taken so that the nurse at the retake center and the large film reader can benefit by this information.) After filling out the "register information" section (fig. 2), the records are returned to the survey organization.

Two copies of the record are then typed. These are the same as the original except that the space for recording the 70-mm. film reading is omitted, 8½″ x 11″ sheets rather than 5″ x 8″ cards are used, and the 14″ x 17″ film reading is decoded. One copy is sent to the health department to advise them that a diagnosis should be forthcoming from either the person's doctor or a clinic. The second copy of the record is sent to the physician or clinic with a letter in which it is requested that the section of the record called "Report to Health Department" be filled out, and that the report be returned when a diagnosis has been established. The person is then asked to report for further examination to his physician or to a clinic, according to the information recorded in the epidemiological record. Procedures similar to the foregoing are also used for persons with possible abnormalities other than tuberculosis.

Filing 70-mm. and 14″ x 17″ Films

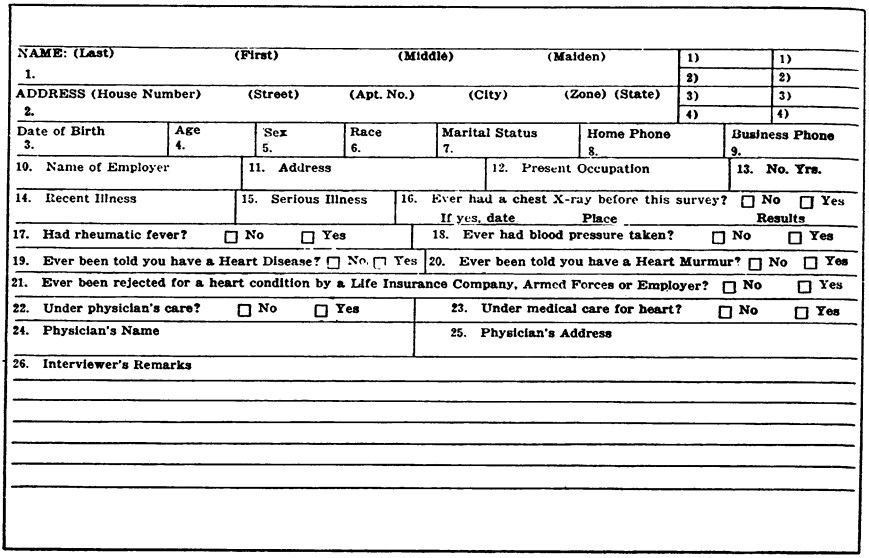
During and after the survey it is often necessary to refer to the 70-mm. films. The rolls of films are filed by film number; therefore, in order to find a particular film, its film number must be known.

[1] For a more complete discussion of the film reading code, see the paper on medical aspects of surveys, in this issue of PUBLIC HEALTH REPORTS.

973050—51—4

This number is obtained from either the stub of the corresponding X-ray card or the X-ray card itself.

X-ray cards for persons whose small films are negative are sometimes filed in numerical order, which is the way they are received from the X-ray units. Cards filed in this way can be of some help in



NAME: (Last) (First) (Middle) (Maiden) 1) 1)
1. 2) 2)
ADDRESS (House Number) (Street) (Apt. No.) (City) (Zone) (State) 3) 3)
2. 4) 4)

Date of Birth 3.	Age 4.	Sex 5.	Race 6.	Marital Status 7.	Home Phone 8.	Business Phone 9.

10. Name of Employer | 11. Address | 12. Present Occupation | 13. No. Yrs.

14. Recent Illness | 15. Serious Illness | 16. Ever had a chest X-ray before this survey? ☐ No ☐ Yes
If yes, date Place Results

17. Had rheumatic fever? ☐ No ☐ Yes | 18. Ever had blood pressure taken? ☐ No ☐ Yes

19. Ever been told you have a Heart Disease? ☐ No ☐ Yes | 20. Ever been told you have a Heart Murmur? ☐ No ☐ Yes

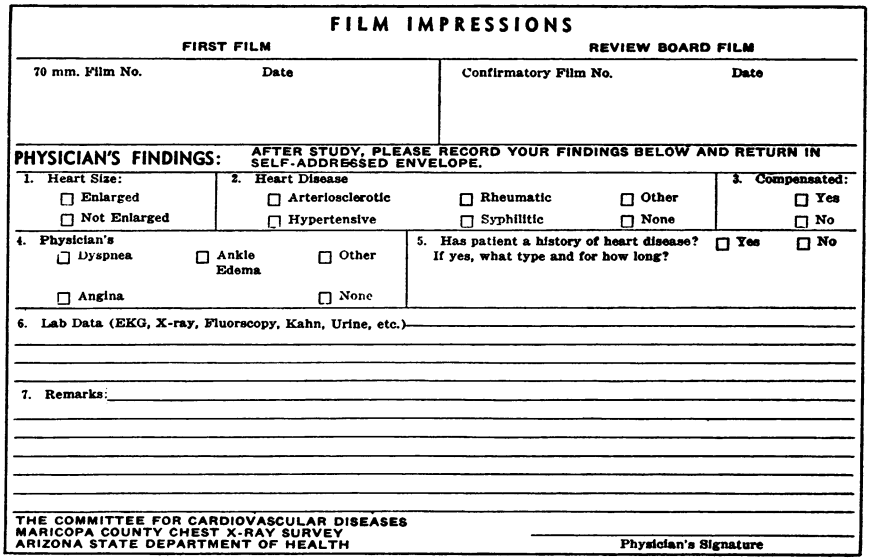
21. Ever been rejected for a heart condition by a Life Insurance Company, Armed Forces or Employer? ☐ No ☐ Yes

22. Under physician's care? ☐ No ☐ Yes | 23. Under medical care for heart? ☐ No ☐ Yes

24. Physician's Name | 25. Physician's Address

26. Interviewer's Remarks

FRONT



FILM IMPRESSIONS

FIRST FILM		REVIEW BOARD FILM	
70 mm. Film No.	Date	Confirmatory Film No.	Date

PHYSICIAN'S FINDINGS: AFTER STUDY, PLEASE RECORD YOUR FINDINGS BELOW AND RETURN IN SELF-ADDRESSED ENVELOPE.

1. Heart Size: ☐ Enlarged ☐ Not Enlarged
2. Heart Disease ☐ Arteriosclerotic ☐ Rheumatic ☐ Other ☐ Hypertensive ☐ Syphilitic ☐ None
3. Compensated: ☐ Yes ☐ No
4. Physician's ☐ Dyspnea ☐ Ankle Edema ☐ Other ☐ Angina ☐ None
5. Has patient a history of heart disease? ☐ Yes ☐ No
If yes, what type and for how long?
6. Lab Data (EKG, X-ray, Fluorscopy, Kahn, Urine, etc.)
7. Remarks:

THE COMMITTEE FOR CARDIOVASCULAR DISEASES
MARICOPA COUNTY CHEST X-RAY SURVEY
ARIZONA STATE DEPARTMENT OF HEALTH

Physician's Signature

BACK

Figure 3. Epidemiological record (suspected cardiovascular abnormality).

locating a film number when the individual has lost his negative notification (the stub of the X-ray card) and does not recall the number. However, an alphabetical card order is usually more desirable because it makes finding film numbers easier. Filing procedures, like most survey procedures must, of course, be based on the particular needs and resources of each community.

X-ray cards for unsatisfactory films are kept in numerical order so that they can be readily counted as a check on the number of poor films taken by each unit.

The cards of persons whose 70-mm. films are positive are filed alphabetically so that film numbers can be easily located in response to the frequent inquiries regarding this group, and to avoid making repeated appointments for persons who have a number of small films taken on their own initiative. In addition to this card file, a numerical list of these persons is kept which shows their name and film reading. This numerical list enables the survey staff to prepare reports on the findings of any X-ray unit for any period of its operation. That is, the film numbers of X-rays taken by a unit on a certain date can be checked to see which of these are also on the list of positive findings. The list also acts as a safeguard against loss of records of the positive group.

The 14″ x 17″ films are numbered and filed in the order in which they are received from the reading room. This file number, the subject's name and his film number are recorded by the survey staff on 3″ x 5″ cards which are filed in alphabetical order. These cards are used during and after the survey to locate the 14″ x 17″ films, and to record the withdrawal and the return of large films borrowed by physicians and clinics to use in establishing diagnoses.

Survey Information Reports

Reports of survey activities are prepared periodically during the survey by the records staff. The daily number of participants at each unit, the number and percent of persons whose 70-mm. X-rays are positive, the number of persons whose findings are confirmed by the 14″ x 17″ films, are all useful data—useful for scheduling X-ray equipment, for anticipating demands on both the retake center and diagnostic facilities, useful for making the community more aware of the survey activities, and for other administrative needs.

At the conclusion of the survey, the records unit prepares a final report of the survey screening operations. Subsequently, all films and records are moved from the survey organization to the local health department.

Follow-up

The health department has the responsibility for public health follow-up on persons whose survey films suggest possible tuberculosis.

As previously mentioned, a records consultant can be assigned by the Public Health Service to help the health department develop special records procedures useful in fulfilling this responsibility. The follow-up procedures for those persons whose X-rays show possible heart disease or lung cancer are determined by the local medical profession in cooperation with the health department.[2] These procedures are often similar to those used in the follow-up of persons whose films suggest possible tuberculosis.

A tuberculosis suspect register is usually established to help follow-up the large number of suspect cases that result from the screening survey. This register is based on the epidemiological records of those persons whose confirmatory films showed the need for further examination. While some of these persons need only one examination before a diagnosis is established, others may need several over a period of many months. The tuberculosis suspect register can facilitate close follow-up where it is needed and can help keep the regular tuberculosis case register from becoming overloaded.

If the patient is found by clinical examination not to have tuberculosis, or to have tuberculosis that is stable so that health department supervision is not thought necessary, the record in the suspect register is transferred to the closed file. If, however, the clinical evaluation results in a diagnosis of significant tuberculosis, the patient's record is taken from the suspect register, a morbidity report is prepared, and a record is initiated in the tuberculosis case register.

Just as before the survey, the tuberculosis case register can yield information that facilitates supervision of persons with tuberculosis, only now the register will more completely represent the community because of the cases added as a result of the survey. Answers can be supplied to such questions as: How many active and questionably active cases are there at home? Of the cases at home that are considered significant for supervision, how many and what percent have not had an X-ray or clinical examination report within the past 12 months? How many cases are closed annually as lost? (A plan for tabulating such information is given in the appendix.)

Postsurvey Records and Reports

Information from the X-ray cards, the epidemiological records, and the tuberculosis case register can be used after the survey to further serve the community. Where good population estimates are available, tabulation of the X-ray cards by age, sex, race, and residence will reveal geographical areas poorly covered and groups that did not respond, thus guiding future case finding and health education programs. From the epidemiological records can be found such things as cases discovered by the survey that were previously unknown, the

[2] This is discussed further in the paper on medical aspects of surveys in this issue of PUBLIC HEALTH REPORTS.

number of new cases who knew of previous contact with a tuberculosis patient, and the number of new cases who had not been X-rayed previous to the survey.

The extensive presurvey review of health department record procedures, the new procedures developed to handle examination and follow-up of large numbers of persons, the greater percentage of persons with tuberculosis in the community who now are listed in the register, all leave the health department with an improved record system to use in its continuing program of tuberculosis case finding and case supervision.

Summary

To summarize the methods used in processing survey records it may be helpful to describe what happens to a participant from the time he comes for the initial 70-mm. X-ray until he reaches the point in the survey process where he is referred to a physician, and to list the corresponding records procedures used by the survey staff.

MR. K GETS A CHEST X-RAY	RECORDS PROCEDURES
1. As he walks into the X-ray station Mr. K is greeted by a receptionist who fills out an identification card for him. He then walks over to the X-ray machine, hands his card to the technician who shows Mr. K the proper position to take before the X-ray machine, and takes the X-ray.	1. (a) An X-ray card is filled out. (b) An identification number is stamped on both the card and stub by the X-ray technician. (c) The card is photographed on the film. (d) The card is placed in a stack to be matched with the developed films. (e) The matched cards and rolls of film are sent to the reading room. (f) A physician examines the films and enters his reading on the X-ray cards.
2. About 2 weeks later:	2. Notifications are sent in one of the following ways, according to the interpretation:
(a) Mr. K receives a post card saying the X-ray of his chest appeared satisfactory; or	(a) The stubs are separated from the X-ray cards and mailed to those whose films are negative.
(b) Mr. K receives a post card saying the X-ray film was faulty and would he please return to any of the survey units for another film; or	(b) Post cards are sent to those whose films are faulty, requesting them to take another film at any of the X-ray units.
(c) Mr. K receives an appointment at the survey retake center.	(c) A personal letter, which includes an appointment at the survey retake center, is sent to those whose small films suggest positive findings. An epidemiological record is initiated and sent to the retake center for persons in this group.

3. Mr. K comes to the retake center where he is met by a receptionist. He hands her his appointment letter and in a moment he is called by a nurse. The nurse interviews him, answers his questions, and then shows him to a booth. He strips to the waist and steps out of the booth when his name is called by the X-ray technician. A film is taken.

3. At the retake center: (a) The epidemiological record is pulled from the files by the receptionist. (b) Lines 3 and 5–15 of the record are completed by the nurse as she interviews the patient. (c) The 14″ x 17″ confirmatory film is taken by the technician. (d) The developed films are sent with the matching epidemiological records to the reading room. (e) The films are read by a physician who enters his impressions on the epidemiological records.

4. About 2 weeks later:

(a) Mr. K receives a letter saying that the shadows noted on the small film were shown by the large X-ray to be of no importance; or,

(b) Mr. K receives a letter saying that the large film showed shadows which should be investigated further and will he please visit his physician.

4. (a) Letters of notification are sent to those whose 14″ x 17″ films show shadows noted on their 70-mm. films to be of no importance; or

(b) Where the large films indicate need for further study, the following action is taken: (1) The epidemiological records are checked against the tuberculosis case register and appropriate information is recorded; (2) two copies of each of the epidemiological records are typed. One copy is sent to a physician or a clinic, together with an explanatory letter, and the other copy is sent to the health department; (3) letters of notification are sent to the participants asking them to visit a physician or a clinic (according to information on the epidemiological records).

APPENDIX I

Tuberculosis Case Register Summary Report (all cases)

Health Department ..... **Six-month period ending** .....

		Survey Cases	*Other Cases*
A.	Tuberculosis cases in current file at beginning of 6-month period (same as item F of preceding report, if any)	_____	_____
B.	Newly reported tuberculosis cases during this period	_____	_____
C.	Tuberculosis cases transferred to current file from closed file	_____	_____
D.	Total tuberculosis cases during period (Sum: items A, B, C)	_____	_____

		Survey Cases	*Other Cases*
E.	Cases transferred to closed file during 6-month period. Reason for closing:		
	1. Death		
	2. Inactive		
	3. Diagnosis changed to nontuberculous		
	4. Moved away		
	5. Lost, unable to locate		
	6. Other, specify: _____		
F.	Tuberculosis cases in current file at end of 6-month period (D minus E)		
	1. Cases in tuberculosis hospitals		
	2. Cases at home, active or activity undetermined		
	a. Sputum or other bacteriology, positive		
	b. Sputum or other bacteriology, negative or no expectoration		
	c. Bacteriological status unknown, or undetermined		
	3. Cases at home, probably inactive or inactive		
G.	Medical follow-up status of cases at home (Sum: items F2 and 3)		
	1. Not yet due for re-examination report		
	2. Overdue, last examination report within 12 months		
	3. Overdue, last examination report 1 year or more ago		
H.	Nonpulmonary cases included in item F above		
I.	Cases at home, active or activity undetermined (item F2)		
	1. Number of active cases		
	2. Number of cases, activity undetermined or unknown		

Prepared by _____

APPENDIX II

Instructions for Preparing Tuberculosis Case Register Summary Report

This report is designed to be as easy as possible to prepare, usually without removing register cards from the file, and thereby not interfering with other uses of the register.

Do NOT include any suspects, contacts, calcifications or other cases which are not reportable.

Instructions for making entries:

Column entries: "Survey cases" are those cases first found and reported as a result of a community-wide X-ray survey.

"Other cases" are those cases first found and reported by other means, even though they may have been subsequently reported by the survey.

A. Enter the total number of tuberculosis cases, both pulmonary and nonpulmonary, in the current file as of the first day of the period. This would be the same figure as in item F of the previous report.

B. Enter total number of new cases reported during the period.

C. Enter here all cases transferred, regardless of reason, from closed file to current file during this period.

D. Self-explanatory.

E. Cases closed may be listed daily on a tabulation ledger or they may be counted at the end of the 6-month period, by reason for closing:

1. All deaths due to tuberculosis and deaths of all other cases transferred from the current file to the closed file during the period.
2. Whenever the health department classifies a case as "inactive, patient able to accept responsibility for recheck X-rays, close," then it should be closed, and transferred to the closed file for this reason.
3. Include those with diagnoses changed to "essentially negative" or to other pathological conditions.
4. Moved away to a specific address in another health department area.
5. Lost, unable to locate and therefore unable to continue follow-up anywhere.
6. If cases are closed for other reasons, specify the reason and the number of cases closed for each reason.

F. Count all living cases in the current file as of the last day of the period. This entry should agree with the figure obtained by subtracting E from D. *Experience has demonstrated the extreme importance of periodically reviewing the accuracy of each signal,* preferably just before counting, to insure the correctness of the tabulation obtained.

1. Enter total by counting signals.
2. Active and questionably active cases at home. Include also quiescent, probably active, and activity undetermined cases. This number should be the total of item a, b, and c, below.
   a. Sputum or other bacteriology, positive. Include all cases here whose latest sputum examination or other bacteriological examination was positive, regardless of date of laboratory report.
   b. Sputum or other bacteriology, negative. Include cases having negative sputum or other bacteriological examinations within the past year, as well as cases having a report within the past year of "no expectoration."
   c. Bacteriological status unknown, or undetermined. Include also those cases which were classified more than 12 months ago as "negative" or "no expectoration" but which have not had any more recent bacteriological reports.
3. Probably inactive. Include all cases with last diagnosis of inactive, apparently arrested or arrested tuberculosis in the current file. Probably inactive cases are kept in the current file as long as the health department deems it desirable to stress supervision and follow-up.

G. Medical follow-up status of cases at home. Enter information obtained by counting appropriate signals or cards.

H. This total may be obtained by counting signals or cards.

I. See F 2 above.

The Finnish Trambusti Tuberculin Test

A Comparison With the Mantoux Test

By Phyllis Q. Edwards and Severi Savonen

Not unlike the Finnish language, the tuberculin test used in Finland is so little known outside that country that interpretation is necessary for the many persons who are not familiar with it. The present paper provides a translation of the Finnish test—a modification of Trambusti's procedure—into terms of its efficiency in relation to the more widely known intradermal Mantoux test.

Although the procedure for giving this particular type of tuberculin test has undergone various modifications during its 24-year history, the basic principle of puncturing the skin with a needle through a drop of tuberculin has remained unchanged. An American pediatrician, Chester Stewart, first described such a test in 1928 (*1*)—a technique born of his desire to test children in a way less objectionable to them than Pirquet's scarification method. Later in the same year an Italian, Bruno Trambusti, published his first paper (*2*) dealing with the test generally known by his name which differed from Stewart's in that a large caliber injection needle was used in place of an ordinary sewing needle. Subsequent minor changes in strength of tuberculin, needle size, and control test with Ringer's solution have been proposed by different investigators without noticeable effect on the popularity of the test except in Finland where it has been used extensively during recent years in the nation-wide tuberculosis-control program (*3*).

In order to relate the results of the Finnish mass BCG campaign with findings in similar mass-examination programs in many other countries throughout the world, a comparison of the Finnish Trambusti test with the more generally used Mantoux was carried out in November 1950 through the cooperation of the Finnish National Anti-Tuberculosis Association and the Tuberculosis Research Office of the World Health Organization.

The Study

Arrangements were made to give two tuberculin tests,[1] the usual Finnish Trambusti in one arm and the Mantoux in the other, during a routine retesting and vaccination program of school children in four

*From the Tuberculosis Research Office, World Health Organization, Copenhagen, Denmark, and the Finnish National Anti-Tuberculosis Association, Helsinki, Finland.

[1] Tuberculins used in this study were provided by the State Serum Institute, Copenhagen: Alt Tuberkulin, batch prepared 26/7, 1950 from lot 1.7 times stronger than the International Standard OT. PPD, freshly prepared dilution of batch RT XIX, XX, XXI, standardized against reference standard PPD.

towns near Helsinki: Tolkis, Strömfors, Lovisa and Mäntsälä. Of 727 boys and 816 girls comprising the group, about 90 percent were 9 to 15 years of age; nearly one-half had been previously vaccinated with BCG, about one-fourth had not been vaccinated, and previous vaccination was not verified in the remainder.

The present technique for giving the Finnish Trambusti test has been in official use since 1946. The radial aspect of the left forearm, about 5 cm. distal to the antebrachial fossa, is cleansed with ether before application of a drop of Old Tuberculin. A No. 12 steel injection needle (Standard S–B Brand), after being heated in a flame, is wiped with an ether sponge, attached to an empty 5-cc. syringe and inserted into the intradermal tissue tangentially, bevel upward, through the tuberculin. When the entire opening of the needle is within the skin, the needle is twisted several times, raised perpendicular to the forearm, lowered and withdrawn. The children are asked not to wipe off the tuberculin for at least 5 minutes. A small amount of bleeding occurs infrequently.

Mantoux tests were given intradermally in the mid-dorsal aspect of the right forearm, injecting 10 TU [2] of PPD in 0.1 cc. of diluent with a No. 25 platinum needle.

The Finnish Trambusti tests were given and read by Annakaisa Mörttinen, a Finnish nurse with considerable experience in the mass BCG campaign work in Finland. Grete Windfeldt, a Danish nurse from the International Tuberculosis Campaign, who during the past year has been a member of a field research team of the Tuberculosis Research Office, gave and read the Mantoux tests.

Reactions were read 3 days after the tests were given. The children went first to the Finnish nurse who, without being allowed to see the Mantoux reaction, dictated to a secretary her measurements of the transverse and longitudinal diameters of induration of the Finnish Trambusti reactions. In addition, she classified reactions as either positive or negative, according to a partially subjective method used in the Finnish mass campaign so that BCG vaccination could be offered to those she considered negative. The children then went into another room where the Danish nurse, before being allowed to see the result of the Finnish test, measured the transverse induration of the Mantoux reaction and noted any bullae, lymphangitis, or other complications of the reaction. After the Mantoux reading had been recorded by a secretary, the Danish nurse then measured the transverse induration of the Finnish test and observed any complications. She did not interpret either the Mantoux or the Finnish reactions as positive or negative. Independent readings of the Finnish Trambusti by the Finnish nurse and the Mantoux by the Danish nurse were thus

[2] 10 tuberculin units=1/5,000 mg. (0.0002 mg.) reference standard PPD=1/1000 mg. (0.1 mg.) International Standard OT.

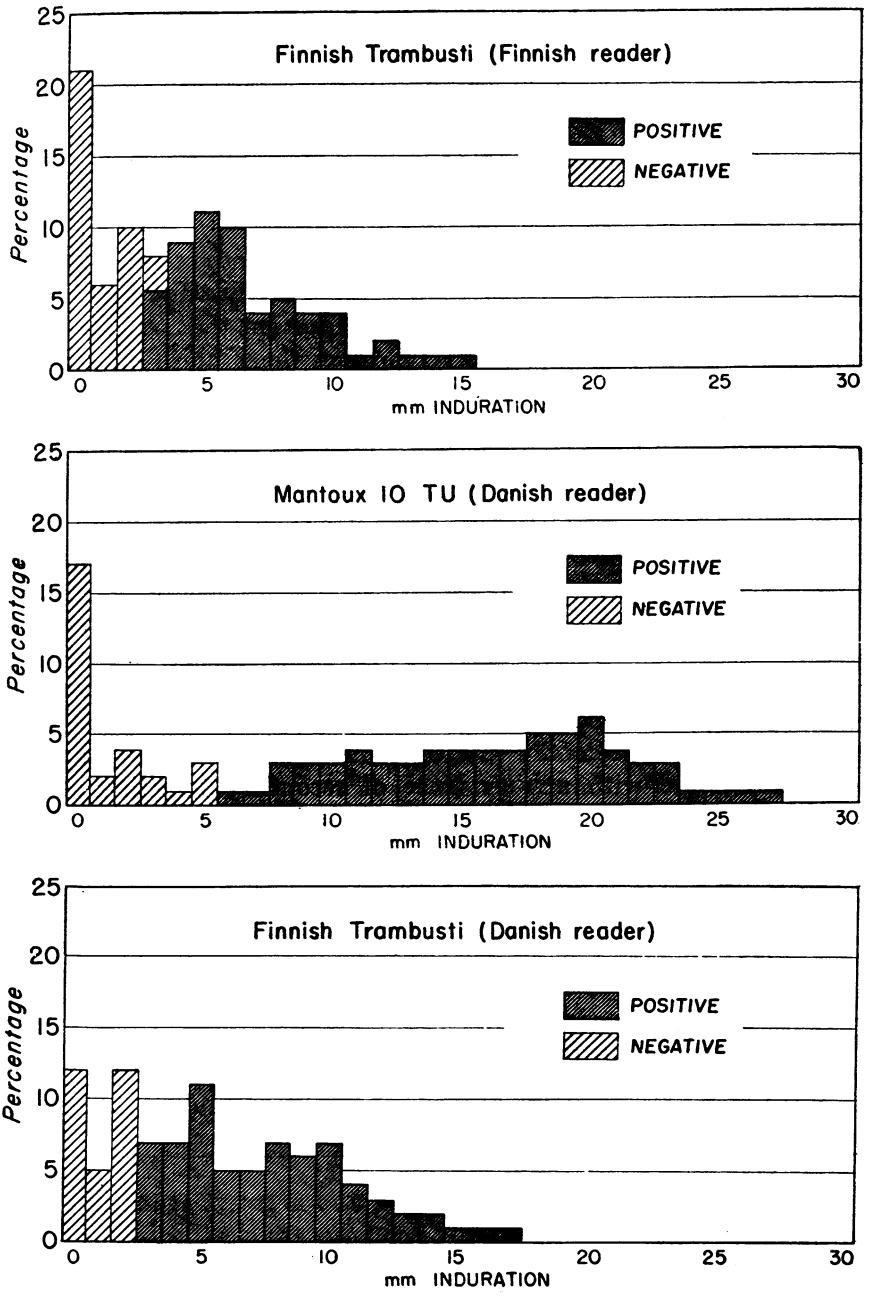


Figure 1. Frequency distribution of reactions by transverse diameter of induration to Finnish Trambusti (above, Finnish reader; below, Danish reader) and Mantoux 10 TU (center, Danish reader) among 1,543 school children given both tests in Finland, November 1950.

obtained for comparative study of the two tests. Moreover, from the measurements of the Finnish test by the Danish nurse additional information is provided for studying variations between two persons reading the same reactions.

Results

General Characteristics of the Tests

Differences in the sizes of the Finnish and Mantoux reactions are illustrated in figure 1 which shows the frequency distributions of the transverse diameter of induration. It is apparent that the Mantoux reactions cover a much broader range than the Finnish Trambusti. As measured by the Finnish nurse, a high proportion of the Finnish reactions were around 5 mm. in diameter with very few larger than 15 mm. By contrast, over one-third of the Mantoux reactions measured more than 15 mm. with a peak in the distribution at 20 mm. Comparison of the Finnish reactions shown in the upper and lower sections of figure 1, however, indicates that the Danish nurse measured induration somewhat larger than the Finnish nurse.

It is not surprising that with the larger Mantoux reactions there was a higher frequency of undesirable reactions—those with vesicles or bullae, large indurations surrounded by a soft edematous swelling of the tissues, lymphangitis, or a combination of two or more (table 1). Lymphangitis was seen only with the Finnish test and did not appear to be associated with any evidence of secondary infection at the reaction site.

Table 1. *Reactions with complications in Finnish Trambusti and Mantoux tests among 1,543 school children*

Reactions complicated with—	Mantoux		Trambusti	
	Number	Percent	Number	Percent
Bullae or vesicles	41	2.7	6	0.4
Surrounding edema	92	5.9	3	.2
Lymphangitis	0	0	6	.4
Two or more of above	32	2.1	0	0
Total	165	10.7	15	1

Classification of reactions as positive and negative is indicated by the shading in figure 1. Mantoux reactions are classified objectively by defining a positive reaction as induration of 6 or more mm. Finnish reactions are separated in the upper section of the figure into positive and negative according to the field interpretations of the Finnish nurse. In the lower section, Finnish reactions as read by the Danish nurse are classified as negative if smaller than 3 mm. in diameter.

The Finnish nurse interpreted 60 percent of her reactions as positive, all of those measuring less than 3 mm. and about one-third of those

measuring just 3 mm. being designated as negative. Except for two reactions of 4 mm., the remainder was called positive (table 2).

A very significant difference between the Finnish and Mantoux tests may be observed in the concentration of reactions near the borderline between positive and negative. For the Mantoux, relatively few reactions occur at the critical point of separation: only 4 percent measure either 5 or 6 mm. in diameter. For the Finnish test, on the other hand, a substantial concentration of reactions is at the borderline: over 18 percent measure either 2 or 3 mm. in diameter.

Table 2. *Classification of Finnish Trambusti reactions as positive or negative according to the transverse diameter of induration measured by the Finnish nurse among 1,543 school children*

Classification	Transverse diameter of induration in mm.							
	0	1	2	3	4	Over 4	Total	Percent
Negative	322	89	162	37	2	0	612	39.7
Positive	0	0	0	84	144	703	931	60.3
Total	322	89	162	121	146	703	1,543	100.0

Agreement Between the Tests

As compared with the classification of 60 percent of the children as positive tuberculin reactors by the Finnish test, 70 percent of the Mantoux reactions would be positive according to the generally accepted criterion that 6 or more mm. of induration denotes a positive. Thus, although the two tests differ by 10 percent in the frequency of positive reactors, the more critical question is how many of the *same* persons are classified as reactors by both tests. The agreement—or disagreement—between two tests may be expressed in terms of the percent of persons positive to both tests among those positive to either or both tests. As table 3 shows, 907 children are designated as positive by both tests, 179 are positive by the Mantoux alone and 24 others are positive by the Finnish test alone. Altogether, 1,110 children are classified as positive by one or both tests with agreement for 907 or 82 percent. The tests disagree in 203 children or 18 percent of the total group who might be regarded as positive, and it is of interest that almost 90 percent of the cases in which there is disagreement are children positive by the Mantoux who are "missed" by the Trambusti (appendix table 1).

The relative magnitude of the disagreement between the Mantoux and the Finnish tests may be estimated in a rather general way by referring to the result obtained by Nissen Meyer (*4*) in a study of duplicate Mantoux tests where the same dosage was given in both the right and left arms and the reactions were read independently by one person (table 4). As these duplicate tests theoretically should produce identical reactions, it is reasonable to assume that the dis-

Table 3. *Relation between reactions classified as positive and negative according to Finnish Trambusti (Finnish reader) and Mantoux 10 TU (Danish reader) among 1,543 school children given both tests, Finland, 1950*

Finnish Trambusti as classified in the field by the Finnish reader	Mantoux 10 TU (Danish reader) when 6 or more mm. of induration is a positive reaction			
	Number positive	Number negative	Total	Percent
Number positive	907	24	931	60.3
Number negative	179	433	612	39.7
Total	1,086	457	1,543	100.0
Percent	70.4	29.6	100.0	

Table 4. *Relation between reactions classified as positive and negative according to duplicate Mantoux tests in 714 persons (4)*

Right arm	Left arm			
	Number positive	Number negative	Total	Percent
Number positive	507	19	526	73.7
Number negative	27	161	188	26.3
Total	534	180	714	100.0
Percent	74.8	25.2	100.0	

agreement which occurred is largely attributable to experimental error both in giving the Mantoux test and in reading the reactions. Disagreement between the two Mantoux tests of 8 percent is analagous to the 18 percent in the present study. Thus, a fairly substantial proportion of the disagreement between the Finnish and Mantoux tests is undoubtedly due to experimental error inherent in both test procedures.

It is of interest to determine whether closer agreement between Finnish and Mantoux tests might obtain if the dividing point between positive and negative for one or both tests is moved a few millimeters in either direction. Actually, the best correspondence for the two readers is found if positive reactions are defined as induration of 3 or more mm. for the Finnish test and 10 or more mm. for the Mantoux (table 5). In this case the percentages positive are 63 and 62 with a disagreement of 15 percent for the persons called positive by either or both tests.

With the Danish nurse's reading of both tests, however, very close agreement between the two tests is found with the usual criterion for a positive Mantoux—6 or more mm. of induration—and 3 or more mm. for a positive Finnish test (table 6, from appendix table 2). In this case 70 percent of the persons tested is called positive by each test with disagreement reduced to 12 percent, a figure not far above the 8 percent disagreement found in the comparison of duplicate Mantoux tests.

Table 5. *Relation between reactions classified as positive and negative according to Finnish Trambusti (Finnish reader) and Mantoux 10 TU (Danish reader) among 1,543 school children given both tests, Finland, 1950*

Finnish Trambusti (Finnish reader) when 3 or more mm. of induration is a positive reaction	Mantoux 10 TU (Danish reader) when 10 or more mm. of induration is a positive reaction			
	Number positive	Number negative	Total	Percent
Number positive	882	88	970	62.9
Number negative	69	504	573	37.1
Total	951	592	1,543	100.0
Percent	61.6	38.4	100.0	

In order to determine if measurements of the Finnish Trambusti reactions by the Danish nurse would be influenced by her knowledge of the Mantoux reactions on the other arm, arrangements were made during the study for her to read Finnish reactions independently in one school by having each class of about 60 pupils pass through the line twice, one test being read each time (appendix table 3). The distribution of the differences between her measurements of the Mantoux and Finnish reactions in these 357 independent double readings was later compared with the corresponding distribution of her 1,186 double readings comprising the bulk of the study. It appeared that essentially no bias of the Finnish reactions was introduced by her knowledge of the Mantoux reactions.

Table 6. *Relation between reactions classified as positive and negative according to Finnish Trambusti (Danish reader) and Mantoux 10 TU (Danish reader) among 1,543 school children given both tests, Finland, 1950*

Finnish Trambusti (Danish reader) when 3 or more mm. of induration is a positive reaction	Mantoux 10 TU (Danish reader) when 6 or more mm. of induration is a positive reaction			
	Number positive	Number negative	Total	Percent
Number positive	1,017	68	1,085	70.3
Number negative	69	389	458	29.7
Total	1,086	457	1,543	100.0
Percent	70.4	29.6	100.0	

Agreement Between the Tests for Vaccinated and Nonvaccinated Children

Since the frequency and the character of tuberculin reactions observed in general population groups may be quite different from those among vaccinated groups, the present material affords an opportunity for determining whether there is a substantial difference in the agreement between the tests in vaccinated and nonvaccinated persons. When the independent readings made by the Finnish and Danish nurses are used for 406 nonvaccinated children (table 7 and fig. 2), there is a relatively low percentage of natural reactors, less

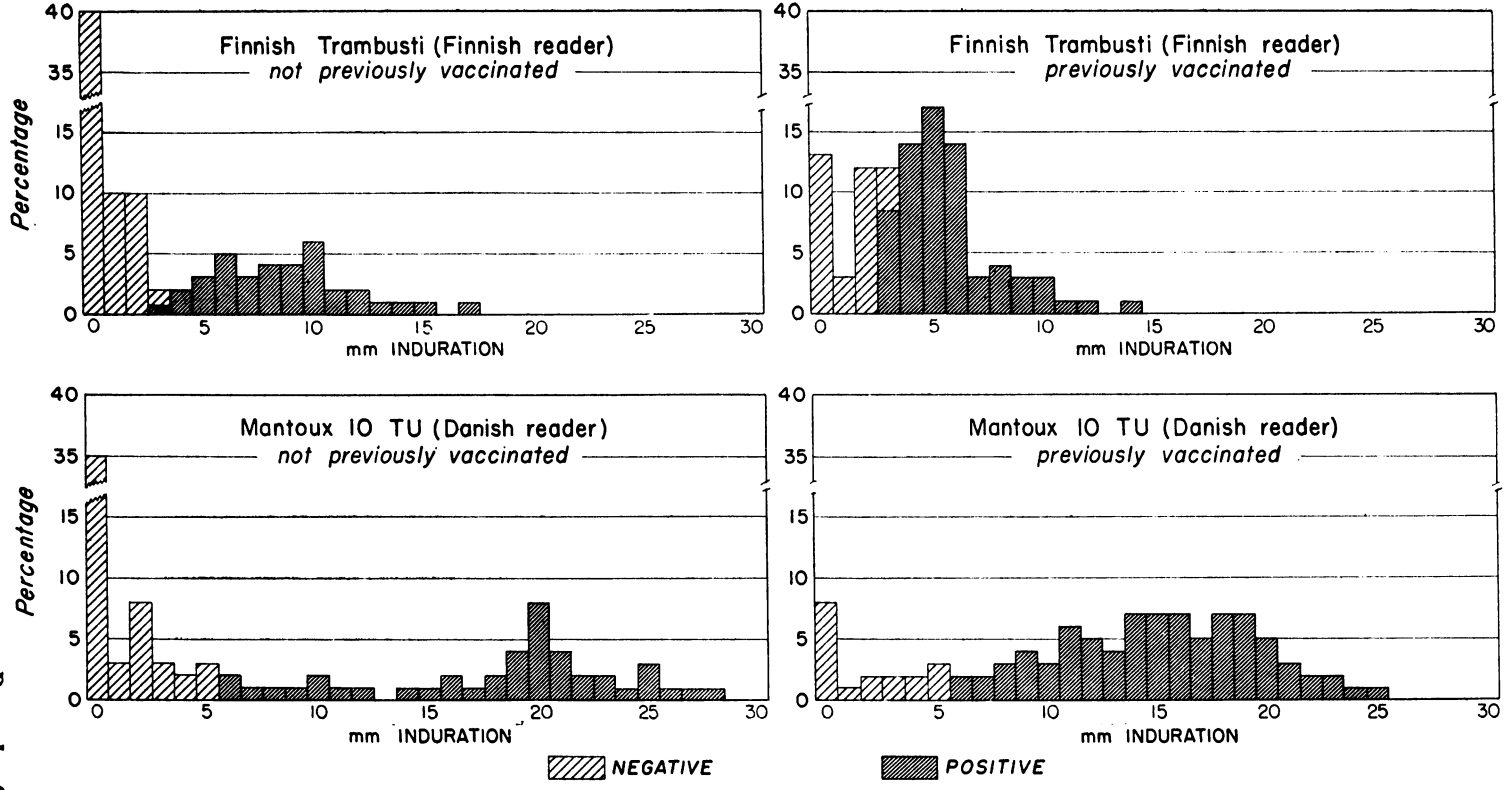


Figure 2. Frequency distribution of reactions by transverse diameter of induration to Finnish Trambusti (upper, Finnish reader) and Mantoux 10 TU (lower, Danish reader) among 406 nonvaccinated and 699 previously vaccinated school children given both tests in Finland, November 1950.

than 50 percent, with disagreement 17.6 percent among those classified as positive by either test. With a greater number of reactors, about 75 percent for 699 vaccinated children (table 8 and fig. 2), the disagreement is only a little higher—20.1 percent—indicating for both groups the problem of discriminating positive from negative when, as in the Finnish test, there is a relatively high concentration of reactions around the dividing line (appendix tables 4 and 5).

Table 7. *Relation between reactions classified as positive and negative according to Finnish Trambusti (Finnish reader) and Mantoux 10 TU (Danish reader) among 406 nonvaccinated school children given both tests, Finland, 1950*

Finnish Trambusti classified in the field by the Finnish reader	Mantoux 10 TU (Danish reader) when 6 or more mm. of induration is a positive reaction			
	Number positive	Number negative	Total	Percent
Number positive	154	3	157	38.7
Number negative	30	219	249	61.3
Total	184	222	406	100.0
Percent	45.3	54.7	100.0	

Table 8. *Relation between reactions classified as positive and negative according to Finnish Trambusti (Finnish reader) and Mantoux 10 TU (Danish reader) among 699 previously vaccinated school children given both tests, Finland, 1950*

Finnish Trambusti classified in the field by the Finnish reader	Mantoux 10 TU (Danish reader) when 6 or more mm. of induration is a positive reaction			
	Number positive	Number negative	Total	Percent
Number positive	468	10	478	68.4
Number negative	111	110	221	31.6
Total	579	120	699	100.0
Percent	82.8	17.2	100.0	

Discussion

The Finnish Trambusti test appears to possess a number of very practical advantages for mass tuberculin testing programs. It is a one-test procedure, whereas the Mantoux not infrequently must be preceded by a low-dose test in order to avoid uncomfortably large reactions in highly sensitive persons. The Finnish test, in this study, caused very few complicated reactions—just 1 percent—in contrast to over 10 percent of the Mantoux reactions which were associated with bullae or edema surrounding the induration. With respect to technique, the Finnish Trambusti is performed quickly, painlessly, and efficiently with a minimum of sterile equipment.

A most serious disadvantage of the Finnish test, however, concerns the important practical problem of discriminating between reactions which fall near the borderline separating positive from negative.

With the Finnish test this point lies approximately between 2 and 3 mm. of induration, and in the present study nearly 20 percent of all persons tested had reactions which fell in those borderline classes. With the Mantoux test, only 4 percent of those tested had reactions at the borderline between positive and negative, 5 and 6 mm. of induration. In both tests the designation of some reactions as positive or negative involves the very practical problem of distinguishing between reactions which differ by only 1 mm. in the size of induration. For the Finnish test, however, the necessity to make such a fine discrimination occurs very much more frequently, in the present study nearly 5 times as often as for the Mantoux. It might be expected, therefore, that erroneous classification due to experimental error will occur more frequently in the Finnish test than in the Mantoux.

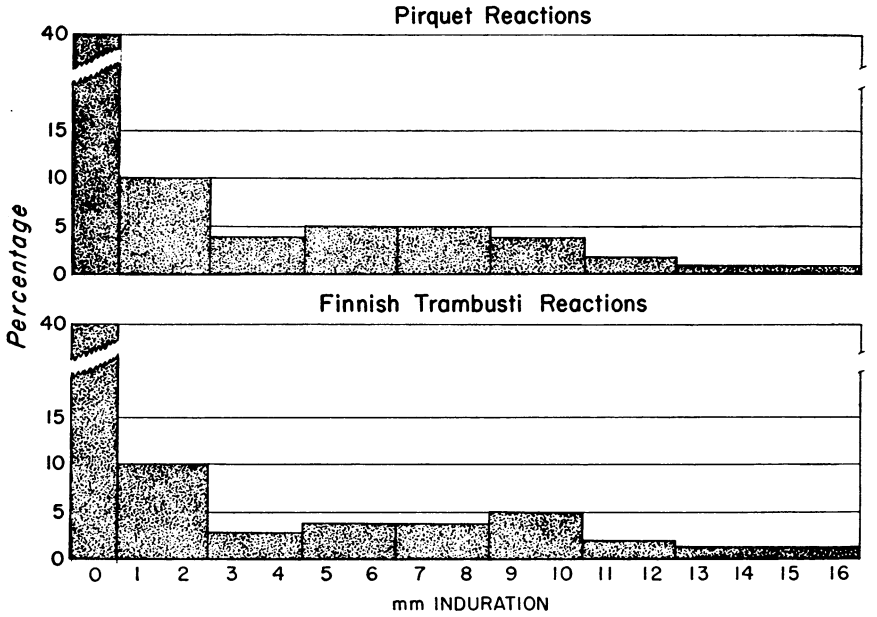


Figure 3. Frequency distribution of Pirquet reactions (above) grouped by 2 mm. classes among 11,414 nonvaccinated persons tested in Norway, 1947–48 (*6*) and Finnish Trambusti reactions similarly grouped (below) among 406 nonvaccinated persons tested in Finland, November 1950.

Another disadvantage in a test producing a fairly narrow range of reactions is the limitation in differentiating levels or degrees of sensitivity. For certain purposes it is desirable to distinguish a number of different degrees of allergy. With Mantoux reactions spread over a broad range from 0 to 30 or more mm., it is feasible to group reactions into a fairly large number of classes of sensitivity, but when most of the reactions lie within half of that range, as with the Finnish test, such groupings are necessarily more restricted.

These disadvantages of the Finnish Trambusti also apply to the

Pirquet test as pointed out in a recent paper by Nissen Meyer (*5*). The procedure for giving these two tests is technically very similar—in one the skin is punctured, in the other it is scarified, through a drop of tuberculin. Further, in size of induration there is a remarkable similarity between the Finnish and Pirquet tests as illustrated in figure 3. The upper part of the figure shows a distribution of Pirquet reactions among 11,414 nonvaccinated persons tested in Norway in 1947–48 (*6*); the lower part shows Finnish Trambusti reactions among 406 nonvaccinated children tested in the present study; the percent of reactors was about the same in the two groups. Even among nonvaccinated persons there is a relatively high frequency of reactions in both tests around the borderline between 2 to 3 mm. of induration where the critical discrimination between positive and negative reactions is made.

Summary

A comparative study of the Finnish Trambusti tuberculin test and the intradermal Mantoux 10 TU test was carried out during a routine retesting and vaccination program among 1,543 children in schools near Helsinki, Finland, in November 1950. Finnish tests in the left arm were given and read by an experienced Finnish nurse; Mantoux tests, in the other arm, were given and read by an experienced Danish nurse who also read the Finnish Trambusti reactions.

The test as used in Finland is given by inserting a No. 12 injection needle into the skin through a drop of Old Tuberculin. Mantoux tests are made by intradermal injection of 10 TU of PPD.

A substantial proportion of Finnish Trambusti reactions centered around 5 mm. of induration in the transverse diameter with almost none exceeding 15 mm.; over one-third of the Mantoux reactions were larger than 15 mm. with a peak in the distribution at 20 mm. Bullae, lymphangitis, or surrounding edema were seen in 10.7 percent of the Mantoux and 1.0 percent of the Finnish reactions.

Sixty percent of the children had positive Finnish Trambusti reactions according to the interpretation made by the Finnish nurse, whereas 70 percent was positive by the Mantoux test if the usual 6 or more mm. of induration is considered positive. Disagreement between the two tests in persons called positive is 18 percent; 203 out of 1,110 persons were positive by one test but negative by the other.

Less disagreement between the two tests is found when Finnish Trambusti reactions of 3 or more mm., read by the Finnish nurse and Mantoux reactions of 10 or more mm., Danish reading, are considered positive. By these criteria, 85 percent of the persons considered positive by either test is positive by both tests—a disagreement of 15 percent for persons called positive. With the Danish nurse's

reading of Finnish Trambusti reactions, however, the best correspondence is obtained with the usual criterion for positive Mantoux reactions of 6 or more mm. of induration and 3 or more mm. for Finnish reactions.

The Finnish Trambusti test, a one-test procedure given easily, quickly, and painlessly with a minimum of unpleasantly large reactions has certain advantages over the Mantoux 10 TU test for mass examinations in that it may obviate the need for graded doses of tuberculin and is performed with very simple supplies and equipment.

The important disadvantage of the Finnish Trambusti test, as with the Pirquet, is the difficult problem of discriminating between positive and negative in the large number of reactions that measure 2 or 3 mm. Nearly 20 percent of the cases, in contrast to 4 percent with the Mantoux, must be distinguished by a difference of 1 mm. of induration which necessarily involves considerable uncertainty due to experimental error.

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Appendix table 1. *Correlation of reactions to Finnish Trambusti (Finnish reader) and Mantoux 10 TU (Danish reader) by size of induration among 1,543 school children given both tests, Finland, November 1950*

Mantoux 10 TU (Danish reader) mm. induration	Finnish Trambusti (Finnish reader) mm. induration																					Total
	0	1	2	−3[1]	+	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	+20	
0	182	45	32	1	7																		267
1	18	2	7	1	1																		29
2	33	11	16		1	2	2																65
3	12	3	12	1	3		1																32
4	13	2	5	1		[2] 2	1																24
5	16	6	10	3	2	2	1																40
6	8	4	5	2	3	[2] 3	2	1															28
7	9	1	7	1	3	5																	26
8	8	4	11	2	4	8	2																39
9	7	3	12	3	6	3	6	2															42
10	5	2	14	4	4	11	8	3															51
11	3	2	7	3	11	12	15	3															56
12	4		4	1	6	12	6	6	2	1					1								43
13	2	1	4	3	8	15	10	3		1													47
14	2	1	7	5	7	17	17	10	2		1												69
15			4	5	5	15	20	12	2	5	3	1		1									73
16		1	2		2	13	19	18	3	5		2	1	2	1								69
17		1	2	1	2	8	13	15	5	8	2	2											59
18					6	9	21	13	6	7	4	5	1	2		2			1				77
19			1		1	3	22	23	8	7	10	5			1		1						82
20					2	4	5	21	14	12	16	13	4	3	1	4	1		1				101
21						1	4	15	3	4	9	14	3	4	1	3	5						66
22						1	1	6		6	8	9		3	2		6						42
23								9	2	9	5	3	3	1	2	1		1	1				37
24								1	3	3	2	1	4	5			2						21
25							1		2	4	2	6		1	2	3	3		1				25
26									2	2	1	4					1	2		2		2	16
27										2		2	1	1		1	1					1	9
28									1		1			2	1		1						6
29																1							1
30													1										1
Total	322	89	162	37	84	146	177	161	55	76	64	67	18	25	12	15	21	3	4	2	0	3	1,543
				121																			

[1] Indicated as positive or negative according to classification by the Finnish nurse; reactions 0–2 mm. were called negative, 4 or more mm. positive.
[2] One reaction called negative by Finnish reader.

Appendix table 2. *Correlation of reactions to Finnish Trambusti (Danish reader) and Mantoux 10 TU (Danish reader) by size of induration among 1,543 school children given both tests, Finland, November 1950*

Mantoux 10 TU (Danish reader) mm. induration	Finnish Trambusti (Danish reader) mm. induration																				Total
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	+20	
0	125	52	70	14	4	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	267
1	11	7	8	3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	29
2	13	12	33	5	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	65
3	5	4	11	8	3	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	32
4	4	----	9	9	1	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	24
5	7	7	11	10	2	3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	40
6	4	1	7	4	4	7	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	28
7	5	----	4	6	6	4	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	26
8	2	2	10	10	7	6	1	1	----	----	----	----	----	----	----	----	----	----	----	----	----	39
9	4	----	8	4	8	14	2	1	----	----	----	----	1	----	----	----	----	----	----	----	----	42
10	2	1	2	12	14	12	4	1	3	----	----	----	----	----	----	----	----	----	----	----	----	51
11	3	----	4	1	10	25	4	2	4	3	----	----	----	----	----	----	----	----	----	----	----	56
12	1	----	2	1	11	5	11	5	4	2	----	----	----	----	----	1	----	----	----	----	----	43
13	1	----	2	4	9	15	4	8	2	1	1	----	----	----	----	----	----	----	----	----	----	47
14	1	----	1	5	11	18	10	9	7	5	2	----	----	----	----	----	----	----	----	----	----	69
15	----	----	1	4	11	16	8	9	10	3	7	2	1	1	----	----	----	----	----	----	----	73
16	----	----	----	1	4	12	12	9	12	6	6	2	2	1	1	1	----	----	----	----	----	69
17	----	----	1	----	4	6	7	11	10	10	3	5	1	----	----	1	----	----	----	----	----	59
18	----	----	----	----	3	7	10	10	10	12	8	7	5	3	1	1	----	----	----	----	----	77
19	----	----	----	----	1	7	4	9	13	19	14	9	4	----	----	2	----	----	----	----	----	82
20	----	----	----	----	----	5	3	5	11	16	19	13	13	4	6	3	----	2	1	----	----	101
21	----	----	----	----	----	2	----	5	7	10	14	4	5	6	3	4	3	3	----	----	----	66
22	----	----	----	----	----	----	----	1	4	6	7	6	6	4	2	2	1	2	----	----	1	42
23	----	----	----	----	----	----	1	----	5	1	10	8	4	2	4	1	1	----	----	----	----	37
24	----	----	----	----	----	----	----	----	1	3	4	2	1	4	4	----	2	----	----	----	----	21
25	----	----	----	----	----	1	----	----	1	----	9	2	3	2	3	1	1	2	----	----	----	25
26	----	----	----	----	----	----	----	----	----	1	2	2	2	1	3	2	----	----	2	----	1	16
27	----	----	----	----	----	----	----	----	----	1	1	2	----	----	2	1	1	----	----	1	----	9
28	----	----	----	----	----	----	----	----	----	----	1	1	1	2	----	----	----	----	1	----	----	6
29	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	1
30	----	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	1
Total	188	86	184	101	115	169	83	86	104	99	108	65	50	30	29	21	9	9	4	1	2	1,543

Appendix table 3. *Correlation of reactions to Finnish Trambusti (Danish reader) and Mantoux 10 TU (Danish reader) by size of induration among 357 school children when both tests were read independently by the Danish reader in Lovisa, Finland, November 1950*

Mantoux 10 TU (Danish reader) mm. induration	Finnish Trambusti (Danish reader) mm. induration																		Total
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
0	33	20	24	3															80
1	3	2	2	1															8
2	6	7	8	3															24
3	3	3	3		2														11
4	2		4																6
5	2	4	5	2															13
6	2		3		1														6
7	2				1	1													4
8	1	1	4	2	1	1													10
9			1	1	2	3													7
10	2		1	5	3	2			1										14
11			3	1	3	6		1											14
12			2		1	2	1	1								1			8
13				3	1	3		2											9
14	1			2	1	4	1	1	3	1									14
15			1	2	2	3	2	2	1	1	1								15
16						3	4	2	1	2									12
17						2	1	1	1		1	2							8
18					2	2	2	1	2	3	2	2	1	2					19
19							3	3	2			2							10
20						1	1	1	5	2	4	1	2		1			1	19
21						1			3	3	2	1	1	2	1		1		15
22									2	3	1	2	1	1				1	11
23							1				2	2	1						6
24										1	1								2
25						1					4		1			1			7
26											1	1			1				3
27										1									1
28											1								1
Total	57	37	61	25	20	35	16	15	21	17	20	13	7	5	3	2	1	2	357

Appendix table 4. *Correlation of reactions to Finnish Trambusti (Finnish reader) and Mantoux 10 TU (Danish reader) by size of induration among 406 nonvaccinated school children given both tests, Finland, November 1950*

Mantoux 10 TU (Danish reader) mm. induration	Finnish Trambusti (Finnish reader) mm. induration																			Total
	0	1	2	−3[1]	+	4	5	6	7	8	9	10	11	12	13	14	15	16	+17	
0	107	22	14																	143
1	9		4																	13
2	19	8	5		1															33
3	5	3	3	1			1													13
4	6		1	1		1														9
5	3	2	5	1																11
6	5	2			1															8
7	4		1			1														6
8	2	1	1			1														5
9		1	2				1	1												5
10	2		3	1		2	1													9
11		1		1		1														3
12			2					1												3
13				1																1
14					2		1													3
15							1	4		1										6
16						2	1	1		2				1						7
17						1	1	2												4
18						1	2		2	2		2				1				10
19						1	2	3	4	1	1	3					1			16
20							1	5	3	4	7	4	4	2		2	1			33
21								1		2	5	4		2	1		2			17
22							1	1		1		2		1	1					7
23								2	1	1	1	1		1	1				1	9
24								1		1		1	2	1						6
25							1		1	2	1	3		1		2	1		1	13
26									1		1	1							1	4
27										1		2	1							4
28									1		1			2	1					5
Total	162	40	41	6	4	11	14	22	13	18	17	23	7	11	4	5	5	0	3	406
				10																

[1] Indicated as positive or negative according to classification by the Finnish nurse; reactions 0–2 mm. were called negative, 4 or more mm. positive.

Appendix table 5. *Correlation of reactions to Finnish Trambusti (Finnish reader) and Mantoux 10 TU (Danish reader) by size of induration among 699 vaccinated school children given both tests, Finland, November 1950*

Mantoux 10 TU (Danish reader) mm. induration	Finnish Trambusti (Finnish reader) mm. induration																		Total
	0	1	2	−3[1]	+	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
0	39	5	7		2															53
1	3		2	1	1															7
2	7	1	8				1													17
3	5		5		3															13
4	5	2	3			[2]1	1													12
5	8	2	4	2	1		1													18
6	2	2	2	2	2	[2]1	1	1												13
7	3		5	1	2	4														15
8	6	3	7	1	1	4	1													23
9	5	2	8	3	3	2	3	1												27
10	1	1	5	2	2	6	3	3												23
11	2		6	2	8	10	11	1												40
12	4		2	1	6	8	6	4	2						1					34
13	1		3	1	5	10	7	1		1										29
14		1	7	4	4	12	10	9	1											48
15			4	5	4	12	14	7	1	2	2									51
16		1	2		2	7	17	13	3	2		2	1							50
17		1	2		2	7	10	8	1	3	1	1								36
18					6	7	11	10	3	3	4		1	1		1				47
19					1		18	15	2	6	5	2								49
20					1	3	2	9	2	5	2	5		1		1			1	32
21							3	7	1		2	7	1	1		1	1			24
22						1		4			3	1		1	1		1			12
23								4	1	2	1		3			1				12
24									1	1	2			1						5
25										1	1				1		1			4
26												2								2
27										1				1						2
28																				0
29																1				1
Total	91	21	82	25	56	95	120	97	18	27	23	20	6	6	3	5	3	0	1	699
				81																

[1] Indicated as positive or negative according to classification by the Finnish nurse; reactions 0–2 mm. were called negative, 4 or more mm. positive.
[2] Called negative by Finnish reader.

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

Announcement

The new monthly PUBLIC HEALTH REPORTS (see back cover) will publish from time to time, as appropriate, reports, tabulations, and articles dealing with morbidity statistics, both domestic and foreign. The present weekly "Incidence of Disease" section, however, will be discontinued as of December 31, 1951.

Current provisional morbidity data on notifiable diseases for the United States will continue to appear in summary form and in tabulations by States and cities in the *Weekly Morbidity Report* issued by the National Office of Vital Statistics of the Public Health Service.

Libraries and agencies that have depended upon PUBLIC HEALTH REPORTS for current morbidity statistics for the United States may continue to receive the same data by writing to the National Office of Vital Statistics, Public Health Service, Washington 25, D. C., requesting that they be placed on the mailing list for the *Weekly Morbidity Report.* Individuals who wish to be placed on the mailing list should indicate how and to what extent they will make use of this publication.

Since the *Weekly Epidemiological Record* and other publications of the World Health Organization, Geneva, Switzerland, contain morbidity data for foreign countries, tabulations of notifiable diseases occurring outside the United States and its Territories will not appear regularly in National Office of Vital Statistics publications.

UNITED STATES

Reports from States for Week Ended November 17, 1951

Tularemia is a disease that has a very distinct seasonal distribution varying with the type of contact or means by which infection takes place. In areas where infection of humans is derived from contact with rabbits, a large proportion of cases occur in the hunting season—namely, in November, December, and January. In areas where ticks are the vectors of infection, tick-borne tularemia occurs most frequently in the months when adult forms of *Dermocenter andersoni* and *D. variabilis* are most numerous—i. e., in May, June, and July. In the Rocky Mountain area where the deer fly, *Chrysops discalis,* is found, nearly all cases which are associated with bites of this fly occur in June, July, and August.

In 1935 a total of 780 cases of tularemia was reported in the United States, following which there was an increase each year until 1939 when there were 2,291 cases. A period of decreasing incidence followed with a low point of 779 cases in 1944. Another peak was reached in 1947 when there were 1,401 cases. Since 1947 the number

of cases reported annually has been on the decline. The case fatality rate for the 1935–39 period was 7.8 percent, and for the 1945–49 period it was 6.0. However, for the latter period, the case fatality rates declined sharply from 13.5 in 1945 to 1.5 in 1949.

The case of anthrax reported by California was in a veterinarian who contracted the infection while performing an autopsy on a cow. The diagnosis was confirmed by culture and animal inoculation.

Fourteen cases of malaria in civilians were reported for the current week. Both cases reported in California were in persons having had military service. One had been in service in Korea. The other had had two recurrences of infection. The numbers of cases reported from military establishments have shown no appreciable decline in the past 8 weeks.

The number of cases of poliomyelitis for the current week was 573 as compared with 625 for the previous week. The cumulative total for the calendar year is 26,763 as compared with 30,756 for the same period last year. The cumulative total since the seasonal low week is 25,551 as compared with 29,625 for 1950.

Diphtheria showed an increase for the current week as compared with the previous week. Except for Missouri, the greatest concentration of cases was in the Southern States. The relatively large number of cases in Missouri is described below.

Measles incidence increased from 2,276 for the week ended November 10 to 3,083 for the current week. More than 40 percent of the cases for the current week were reported in the Middle Atlantic States.

Meningococcal meningitis cases (78) were greater in number for the previous week (59) and for the same week last year (59). California was the only State reporting more than 10 cases.

Epidemiological Reports

Salmonellosis

Dr. Dean Fisher, Maine Director of Health, has submitted supplementary information on a milk-borne outbreak of salmonellosis which was reported in September 1951. At that time there was epidemiological evidence that a nephew of a dairyman was the probable source of infection. The boy refused to submit specimens on religious grounds. However, a specimen was finally obtained which showed the presence of an organism with the characteristics of *S. paratyphi* B. Further confirmation of the boy's role in the outbreak is that eight of the cases and one healthy carrier all had the same phage type of organism as that obtained from the boy. This boy was found to be a convalescent carrier of *S. paratyphi* B. in 1948 and now is regarded as a chronic carrier.

Diphtheria

Dr. B. G. Hamilton, Missouri Director of Health, reports that 30 cases of diphtheria occurred in Kansas City for the 2 weeks ended November 17. All of the cases except 1 have been reported from a limited area of the city, and 12 live in a resident hotel.

Gastroenteritis

Dr. M. H. Merrill, California Acting Director of Health, has reported an outbreak of food poisoning in which Boston cream pie was suspected as being the vehicle of infection. About 256 persons ate the suspected food and it is estimated that 111 became ill. The food was prepared 10 hours before eating and left at room temperature until eaten.

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
	Nov. 17, 1951	Nov. 18, 1950			1950–51	1949–50		1951	1950	
Anthrax (062)	2	1	1	(1)	(1)	(1)	(1)	56	41	46
Diphtheria (055)	144	177	255	27th	[2] 1,619	2,180	3,865	[2] 3,627	5,308	8,476
Encephalitis, acute infectious (082)	16	29	13	(1)	(1)	(1)	(1)	932	886	589
Influenza (480–483)	566	756	940	30th	5,455	8,346	8,346	121,510	147,110	135,733
Measles (085)	3,083	1,863	1,696	35th	16,743	10,674	10,258	485,654	298,845	569,190
Meningitis, meningococcal (057.0)	79	55	64	37th	572	537	516	3,633	3,336	3,070
Pneumonia (490–493)	742	1,146	(3)	(1)	(1)	(1)	(1)	53,296	72,181	(3)
Poliomyelitis, acute (080)	573	958	651	11th	25,551	29,625	25,341	26,763	30,756	25,691
Rocky Mountain spotted fever (104)	3	3	2	(1)	(1)	(1)	(1)	326	449	544
Scarlet fever (050) [4]	1,189	1,097	1,504	32d	7,808	8,300	10,789	61,194	48,470	66,878
Smallpox (084)	------	------	------	35th	3	3	4	14	29	51
Tularemia (059)	6	9	15	(1)	(1)	(1)	(1)	574	793	847
Typhoid and paratyphoid fever (040, 041) [5]	59	54	62	11th	2,401	2,645	3,074	2,836	3,154	3,559
Whooping cough (056)	1,151	2,052	2,052	39th	7,298	11,426	11,426	61,073	108,621	87,574

[1] Not computed [2] Addition: Minnesota, week ended Nov. 10, 3 cases. [3] Data not available.
[4] Including cases reported as streptococcal sore throat. [5] Including cases reported as salmonellosis.

Reported Cases of Selected Communicable Diseases: United States, Week Ended Nov. 17, 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	**144**	**16**	**566**	**3,083**	**79**	**742**	**573**
New England	**2**		**7**	**489**	**8**	**38**	**6**
Maine			3	133	1	4	1
New Hampshire			4	25	1		
Vermont				19			2
Massachusetts	2			181	4		1
Rhode Island				58	1		
Connecticut				73	1	34	2
Middle Atlantic	**7**	**1**	**3**	**1,307**	**10**	**88**	**46**
New York	3		[1]	626	6		15
New Jersey	3	1	3	287	3	39	13
Pennsylvania	1			394	1	49	18
East North Central	**19**	**2**	**9**	**436**	**15**	**79**	**100**
Ohio	7			126	3		17
Indiana	5		5	20	1	9	11
Illinois	1	2		150	6	60	32
Michigan	6		4	97	4	10	18
Wisconsin				43	1		22
West North Central	**30**	**2**	**17**	**116**	**3**	**58**	**65**
Minnesota	2			16		2	6
Iowa		1		1	3	1	9
Missouri	27			6			18
North Dakota		1	16	78		51	2
South Dakota				4			2
Nebraska	1			6			10
Kansas			1	5		4	18
South Atlantic	**45**	**3**	**62**	**257**	**10**	**93**	**46**
Delaware							1
Maryland		2	1	146	1	32	5
District of Columbia				14		14	
Virginia	13	1		24	5	40	4
West Virginia				13	2		16
North Carolina	9			7	1		1
South Carolina	9		5	5		2	3
Georgia	14		56	46		5	9
Florida				2	1		7
East South Central	**21**	**2**	**2**	**132**	**7**	**57**	**50**
Kentucky	4			79	1	3	4
Tennessee	2	1		10	2		16
Alabama	8			35	2	37	4
Mississippi	7	1	2	8	2	17	26
West South Central	**15**		**148**	**44**	**8**	**221**	**76**
Arkansas	2		111	4	1	21	7
Louisiana	3		2			26	6
Oklahoma	4		35	1	2	17	19
Texas	6			39	5	157	44
Mountain	**2**	**1**	**246**	**128**	**3**	**56**	**41**
Montana	1		2	45			3
Idaho				3			3
Wyoming				13		1	4
Colorado			116	19	1	17	8
New Mexico	1	1		3		11	3
Arizona			128	18	1	27	6
Utah				27	1		13
Nevada							1
Pacific	**3**	**5**	**72**	**174**	**15**	**52**	**143**
Washington	1	1	62	43	1	1	13
Oregon			6	30	2	19	14
California	2	4	4	101	12	32	116
Alaska							
Hawaii			66	472		1	1

[1] New York City only.

Anthrax: California, Pennsylvania, 1 case each.

Reported Cases of Selected Communicable Diseases: United States, Week Ended November 17, 1951—Continued

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

Area	Rocky Mountain spotted fever (104)	Scarlet fever [1] (050)	Smallpox (084)	Tularemia (059)	Typhoid and paratyphoid fever [2] (040, 041)	Whooping cough (056)	Rabies in animals
United States	**3**	**11189**		**6**	**59**	**1,151**	**128**
New England		**66**			**3**	**136**	
Maine		12				8	
New Hampshire		6				10	
Vermont		1			1	30	
Massachusetts		23			2	63	
Rhode Island		7				2	
Connecticut		17				23	
Middle Atlantic		**167**			**8**	**231**	**14**
New York		92			2	94	6
New Jersey		29			2	71	
Pennsylvania		46			4	66	8
East North Central		**355**		**3**	**5**	**241**	**12**
Ohio		136			1	60	2
Indiana		30			1	15	4
Illinois		56		3		25	5
Michigan		103				38	1
Wisconsin		30			3	103	
West North Central		**62**			**5**	**86**	**20**
Minnesota		14			1	17	11
Iowa		13				1	6
Missouri		9			4	27	3
North Dakota		1				1	
South Dakota						9	
Nebraska		5				20	
Kansas		20				11	
South Atlantic	**2**	**174**		**1**	**10**	**76**	**17**
Delaware		2					
Maryland	2	13				6	
District of Columbia		10				2	
Virginia		23			4	13	5
West Virginia		34			1	28	
North Carolina		52			1	16	4
South Carolina		5				2	2
Georgia		16		1	2	4	6
Florida		9			2	5	
East South Central		**86**		**1**	**7**	**69**	**23**
Kentucky		34			2	18	7
Tennessee		40		1	2	25	8
Alabama		9			1	18	2
Mississippi		3			2	8	6
West South Central		**38**			**7**	**200**	**33**
Arkansas		4				19	4
Louisiana		1			5	7	
Oklahoma		12				19	4
Texas		21			2	155	25
Mountain	**1**	**46**			**5**	**37**	**9**
Montana		12				7	
Idaho		10					
Wyoming	1					2	9
Colorado		3			3	12	
New Mexico		3			2	6	
Arizona		6				9	
Utah		11				1	
Nevada		1					
Pacific		**195**		**1**	**9**	**75**	
Washington		14			1	2	
Oregon		28		1		7	
California		153			8	66	
Alaska							
Hawaii							

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

FOREIGN REPORTS

CANADA

Reported Cases of Certain Diseases—Week Ended November 3, 1951

Disease	Total	New found-land	Prince Ed-ward Island	Nova Scotia	New Bruns-wick	Que-bec	On-tario	Mani-toba	Sas-katch-ewan	Al-berta	Brit-ish Co-lum bia
Brucellosis	5					4		1			
Chickenpox	876	2		6	1	149	244	38	115	174	147
Diphtheria	9					9					
Dysentery:											
Amebic	7					7					
Bacillary	20						1			2	17
Encephalitis, infectious	1							1			
German measles	52			2		3	7	1	8	21	10
Influenza	26			17				1			8
Measles	870	6		37	2	87	97	15	8	275	343
Meningitis, meningococcal	7			1	1	1	1	2			1
Mumps	313	5		7		48	141	18	16	24	54
Poliomyelitis	45			2	4	9	15	1	1	2	11
Scarlet fever	335	7		1	2	106	19	22	23	35	120
Tuberculosis (all forms)	184	38		4	1	74	19	22	13	13	
Typhoid and paratyphoid fever	5				1	3		1			
Venereal diseases:											
Gonorrhea	298	3		5	12	64	61	15	14	50	74
Syphilis	84	1		2	5	47	13	2	5	2	7
Primary	19					14	4			1	
Secondary	5					3	1	1			
Other	60	1		2	5	30	8	1	5	1	7
Whooping cough	266			1	3	97	63	17	26	37	22

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.

Smallpox

Burma. The outbreak of smallpox in Mergui continues with 22 cases being reported for the week ended November 10 as compared with 18 for the previous week. In Moulmein and Rangoon, one fatal case each was reported for the week ended November 10.

French Equatorial Africa. An outbreak of smallpox has occurred with 84 cases being reported for the period October 21–31, as compared with 16 for the previous 10-day period.

Indonesia. During the week ended October 27, two cases of smallpox were reported in Pontianak, Borneo.

Pakistan. For the week ended November 10, four imported cases of smallpox were reported in Karachi. These are the first cases since the week ended August 11, when one case was reported. During the week ended November 10, three cases were reported in Lahore.

Typhus Fever

France. During the week ended October 27, two cases of typhus fever were reported in the Seine Department. One case was a recurrence after 25 years, and the other was in a patient who became infected by handling contaminated packages. Neither of the patients had lice.

Indochina. For the week ended November 10, one case of typhus fever was reported in the seaport of Nhatrang, Viet Nam.

Turkey. During the week ended November 10, seven cases of typhus fever were reported in Turkey.

Yellow Fever

Colombia. During the week ended October 14, two cases of jungle yellow fever were reported in San Vicente de Chucuri, Santander Department.

Gold Coast. One suspected case of yellow fever was reported October 23, in a village 12 miles north of Oda.