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Proposed Elements of a State Cancer Control Program

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Today the most baffling public health problems are related to the so-called degenerative diseases, those noncommunicable conditions which afflict most frequently the adult, especially the middle-aged. State health agencies throughout the country have recognized the significance of these problems and their activities are being correspondingly broadened. National concern about this type of disease led first to passage of the National Cancer Institute Act in 1937, with provisions for aid to State cancer control efforts, and more recently to Federal legislation in the fields of heart disease, dental, and mental health.

Cancer control, the first of these disease problems to receive widespread public health consideration, has developed rapidly. By constantly improving our programs, the United States can go far in reducing the mortality from this disease. Furthermore, cancer control methods may well provide a pattern for use in control of the other widely prevalent noncommunicable diseases. Briefly outlined are a number of activities which have been found useful in cancer control work, and which are suitable for State programs.

State Activities Today

In 1942 only 10 States had active cancer control programs. By 1949, the number of official programs was up to 48, plus 4 in the Territories. This change has come as a result of increased nation-wide awareness of the rising cancer problem and the availability of funds for cancer control purposes through the National Cancer Institute. Although well-rounded programs have not yet been established in all States, public concern with cancer is growing and these State activities will assuredly continue to expand in scope and effectiveness.

As of December 1948, 17 States had enacted laws for a permanent cancer program: 12 provide for cancer control work in the State

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health department; 4 provide for a State Cancer Commission; and one provides for cancer activities at a State University. In addition, 8 States included cancer control funds as part of their general appropriations, while 9 others provided for case reporting or other types of activity. Although the passage of permanent cancer legislation probably has a stabilizing effect and tends to assure program continuity, the lack of such legislation has not seriously hampered the establishment of cancer control activities. Several States have developed highly successful programs under the general authority vested in the State health department.

A wide diversity is found in State cancer control activities. This situation is certainly desirable in a Nation whose States are so different economically, physically, socially, and culturally. Although the basic principles of cancer control are the same for all and are determined by the development of medical science, each State program must be designed to fit local needs and resources.[1]

Cancer Control Funds

At present levels of public health expenditures and considering current needs, a State may reasonably expect to spend 10 to 20 cents per capita annually for cancer control. Within these limits, depending on the prevalence of cancer in the State and on available medical-care resources, it should be possible to organize a well-rounded program.

Cancer activities are not, of course, limited by available State appropriations. Voluntary contributions to the American Cancer Society, resources of medical institutions and efforts by local communities will also aid cancer control. Since 1947, the Federal Government, through the National Cancer Institute, has allotted annually $2½ million among the States on a formula basis, with the provision that the recipient State match one dollar for every two Federal dollars. Under this grant-in-aid plan, individual States received from $4,606 to $215,276 in 1949. These funds may be used for any of a large number of types of cancer activities, as well as for certain administrative expenses necessary to the cancer program.[2]

Special control project grants are made by the National Cancer

[1] A. V. Deibert: A half century of State cancer legislation. Pub. Health Rep. 63: 1128–1135 (1948).

[2] Federal cancer control grants may be used for the following administrative expenses:

(a) Direct cost of the cancer control program, including administrative and generalized services to the extent that such services support the control program.

(b) Necessary supplies, equipment, and other expenses incident to the control program.

(c) Salaries, fees, and travel of personnel exclusively administering the program or providing direct services to individuals under the program.

Without special approval, these Federal grant funds may not be used for other administrative expenses, nor for building construction, hospitalization (longer than 3 days for diagnostic purposes), transportation of patients, palliative or terminal care, or certain other purposes as specified in Public Health Service Regulations. (Grants-in-Aid Manual, Bureau of State Services, 13-3, Sec. 11.)

Institute to States, local health agencies, hospitals, universities, and other nonprofit institutions for the development of cancer control methods and services. In 1949, $1 million was available for such grants. In addition, the National Cancer Institute makes available amounts up to $25,000 to medical schools and up to $5,000 to dental schools for improvement of undergraduate cancer teaching. A limited number of National Cancer Institute traineeships assist qualified physicians in taking advanced clinical work in cancer fields.

A State Cancer Program

Successful cancer treatment, in our present state of medical knowledge, depends on early case finding, accurate diagnosis, and prompt treatment. State programs, therefore, must be directed toward development of lay and professional information programs and assurance of the strategic distribution of adequate cancer services and facilities.

Because of its scope and complexity, solution of the cancer problem cannot be the sole responsibility of official health agencies. In some areas, in fact, medical societies and voluntary groups took the lead in initiating cancer activities long before any State or local official action was begun. Among those concerned with various aspects of cancer control are the general practitioner; specialists such as the pathologist, radiologist, surgeon, and internist; medical societies; divisions of the American Cancer Society; medical, dental, and nursing schools; hospitals providing cancer services; research centers; and welfare agencies.

None of these groups or individuals, working alone, can hope to make any appreciable headway against the disease. Only by pooling resources and establishing efficient working relationships can cancer control progress be achieved. Essentially the role of the State health agency is to provide leadership in bringing these forces together and contributing what it can through use of available public funds and personnel.

Cancer Coordinating Committee

Recognizing this need for broad participation and combined effort, many States are forming cancer coordinating committees to help plan and guide all cancer work within the State. These committees usually include representatives of the State health department, State medical society, and State division of the American Cancer Society. They might also include representatives of medical specialty groups, dental society, nurses' organizations, medical educators, welfare agencies, and others concerned with cancer. It is important that the committee include representatives of all major agencies concerned with the disease.

The first task of such a committee should be to study the cancer problem in the State, make policies, and develop a plan for making the best possible use of available resources. This means, of course,

that the committee will define the responsibilities and functions of each organization. It also means that the various agencies shall be willing to accept committee leadership.

No attempt is made to indicate which individuals or groups should carry out the particular types of projects in the various activities listed below. However, emphasis has been placed on projects that might most suitably be carried out by the State health department or made possible by assistance from that department. Furthermore, the order in which these suggestions are made is highly arbitrary, and does not represent a sequence of steps which should be taken to achieve a balanced program. These activities are merely presented as individual suggestions which have been successfully used or are being tested in various places and which might be fitted into a well-rounded State program.

Professional Education

Professional education is an essential part of any State cancer control program. Cancer control depends on a well-informed professional group, including not only the family physician and the medical specialist, but also the dentist, the nurse, the pharmacist, and members of the public health staff. All of these individuals should be intelligently "cancer conscious," and know how they can aid in earlier case finding and help in the management of cancer cases.

Medical Practitioners

The alertness, skill, and knowledge of the medical practitioner is the pivot of the cancer program. There is an urgent need to increase cancer awareness of the entire medical profession, to teach them how to recognize early cancer cases, and to keep them informed on recent developments in prevention, diagnosis, and treatment. Working with the medical groups, the State health department can:

1. Prepare and distribute a monthly bulletin giving reviews of cancer subjects and abstracts of current cancer literature. (Examples: Illinois Cancer Bulletin, Texas Cancer Bulletin.)
2. Prepare and distribute a manual for physicians on cancer case finding, diagnosis, and treatment. (Example: Iowa Cancer Manual, Massachusetts Cancer Manual.)
3. Encourage regular publication of cancer papers in medical journals.
4. Encourage presentation of cancer papers at State and county medical society meetings.
5. Prepare or purchase visual aids for circulation among local medical groups, including photographic slides showing early cancer lesions, tissue section slides, cancer teaching films, and exhibits.
6. Help organize and support cancer refresher courses for practicing physicians at medical teaching centers.

7. Aid the organization of and provide support for short regional cancer conferences or seminars.
8. Help organize and support program of circuit cancer clinics, bringing outstanding cancer workers into all parts of the State to demonstrate diagnostic methods.
9. Encourage postgraduate study and attendance at cancer refresher courses by paying tuition, fees, or travel expenses.

Undergraduate Medical Students

Every medical undergraduate must have the opportunity to acquire a sound basic understanding of cancer and to become well acquainted with suspicious signs and symptoms through clinical observation. To help coordinate cancer teaching for undergraduates, the National Cancer Institute makes annual grants up to $25,000 to medical schools. This aid can be supplemented from sources within the State.

1. Provide funds for purchase or preparation by medical schools of visual teaching aids, including films, photographic slides, and tissue slides.
2. Provide funds for equipping and expanding cancer teaching clinics.
3. Increase understanding of cancer as a public health problem by providing lectures on cancer control by public health personnel and providing opportunities for students to receive training in the health department.

Graduate Medical Students

Proper management of cancer requires the services of many types of qualified physicians, including pathologists, radiologists, surgeons, and internists. Through the National Cancer Institute and the American Cancer Society, a limited number of clinical traineeships are available for physicians interested in obtaining additional knowledge and experience in cancer care. Further assistance can be given through State appropriations and allotted Federal funds to increase the supply of physicians qualified to care for cancer patients.

1. Establish fellowships in pathology, radiology, surgery, and internal medicine.
2. Encourage and, where possible, help hospitals improve their staffs and facilities in order to provide more opportunities for approved interne and resident training in cancer.

Dental Practitioners

A high proportion of skin and oral cancer lesions may readily be observed by the dentists. It is important that the dentist recognize suspicious conditions and help obtain proper care for the patient.

Working with the dental groups, the State health department can:

1. Encourage dental societies to present cancer subjects at their meetings.
2. Prepare or purchase visual aids for circulation to local dental meetings, including photographic slides showing early cancer lesions, teaching films, and exhibits.
3. Help organize and support short cancer courses at dental teaching centers.
4. Help organize and support cancer symposia and conferences in various parts of the State.
5. Assist in the organization and support of traveling teams to acquaint dentists in all parts of the State with cancer recognition.

Dental Students

Cancer teaching in dental schools, as in medical schools, is aided through annual National Cancer Institute grants. These Federal grants are limited to $5,000 annually, but further aid for improved cancer teaching may be provided by the State.

1. Provide funds for purchase or preparation of visual teaching materials, including films, slides, and moulages.
2. Provide funds for equipping and expanding cancer clinics where dental students may observe diagnostic and treatment methods.
3. Increase the understanding of cancer as a public health problem by providing lectures to dental students on cancer control by public health personnel and opportunities for undergraduates to receive training in the health department.

Nurses

Nurses require a thorough understanding of the special needs of the cancer patient and the special techniques necessary for proper bedside care. The public health nurse should not only understand these care needs but should also be equipped to play a very important part in case finding, referral, follow-up, and dealing with psychological, socio-economic, and rehabilitation problems. The State health department can aid this education in many ways.

1. Provide courses and in-service training in cancer care and cancer control methods for public health nurses.
2. Prepare or purchase visual teaching materials for circulation to nursing groups, including slides, films, and exhibits.
3. Provide manuals on cancer nursing for clinical and public health nurses.
4. Help schools of nursing properly integrate cancer teaching into undergraduate curricula.

5. Sponsor medical lectures providing useful and up-to-date cancer information for nurses.
6. Help organize and support cancer nursing institutes for hospital nurses.
7. Establish scholarships for postgraduate cancer nursing education.

Public Health Staff

Since cancer has only recently been considered a public health problem, relatively few public health workers are familiar with control methods. Not only physicians and nurses, but also health educators, medical social workers, statisticians, and medical record librarians and other public health personnel should be familiar with the cancer problem.

1. Provide orientation courses for all public health personnel, and special instruction for staff members concerned with specific phases of the program.
2. Encourage study at schools of public health through scholarships, fellowships and leaves of absence. (The Yale and Harvard Schools of Public Health now offer cancer control courses for regular and special students.)

Pharmacists

Many persons go to the pharmacist for advice on chronic ailments which seem minor but which may possibly indicate cancer. The well-informed, alert pharmacist, therefore, is potentially an important cancer case finder. During the past year a joint National Cancer Institute-American Pharmaceutical Association project has been providing pharmacists with cancer information through pharmaceutical journals and by means of direct mailings. This education work should be supplemented and continued by efforts within the State.

1. Provide lecturers on cancer control for senior classes at schools of pharmacy.
2. Help provide opportunities for cancer clinic observation of selected cases by senior pharmacy students.
3. Prepare and distribute information materials acquainting pharmacists with common cancer signs and urging them to refer the customer to his family physician or a cancer clinic.

Lay Education

Lay cancer education teaches three things: Know possible cancer symptoms—seek medical attention promptly—obtain periodic medical examinations.

In many States, the American Cancer Society has assumed a leading role in lay education. In these cases, it will be desirable for the

official health agency to work in close cooperation with this voluntary group and to supplement its efforts.

1. Prepare and distribute accurate, clear cancer information through such media as pamphlets, press releases, posters, radio broadcasts, periodicals, and exhibits.
2. Maintain a lending library of cancer films suitable for lay audiences.
3. Provide information on cancer control facilities and services, including lists of cancer clinics and detection centers, physicians who will provide complete health examinations, and physicians who provide cancer diagnostic and treatment services.
4. Sponsor a speakers' service which will maintain a list of available speakers; prepare speech outlines and other materials that may be useful in planning talks for lay groups; provide honoraria for medical speakers; and encourage civic groups, fraternal organizations, church groups, labor unions, and others to plan cancer talks for their members.
5. Assist in the organization of lay cancer education committees in local communities. (Example: Cooperative Cancer Control Committees in Massachusetts.)
6. Help plan lay cancer education programs in hospitals and health centers.
7. Instruct public health nursing staff in lay education methods, including instruction during home visits and talks before lay groups.
8. Develop special cancer education programs for various groups such as labor union memberships, factory workers, office workers, rural families, foreign language groups, and others.
9. Introduce cancer education into school curricula at secondary levels in order to instill in young people sensible attitudes toward cancer hygiene, combat the formation of fears, and give them a sound understanding of the disease. This may be done through teacher instruction in teachers' colleges; provision of teaching guides, films, and texts; and modification of school curricula to introduce discussion of cancer at appropriate places in biology, health education, and social studies classes.[3]

Case Registers and Statistical Services

A well-organized and effective system for the accumulation of information on cancer morbidity and mortality is needed in every State. Such data afford a basis for program planning and for the provision of nursing and follow-up services. Statistical analysis of case reports may reveal epidemiologic factors, provide a yardstick of

[3] Statement of principles as a guide for cancer education in the schools. American Cancer Society, March 1949.

the need for cancer services and facilities, and measure the effectiveness of the cancer program.

1. Develop and maintain an active cancer register system which will be useful in cancer programs at both State and local levels.
2. Develop and help introduce a system for referral and follow-up services, provided on the local level, to assure adequate supervision of all reported cancer cases as an aid to hospitals, clinics, and physicians.
3. Provide advisory service to clinics and hospitals on use of cancer case records.
4. Make epidemiologic studies using material from the cancer case register, hospital records, or sample surveys.
5. Develop indexes of the effectiveness of cancer control work such as studies of survival rates, delays in obtaining diagnosis and treatment, need for hospital and nursing services.
6. Provide advisory service to physicians and clinic groups on statistical analysis and interpretation of case records.
7. Prepare statistical materials in the form of charts, articles, slides and exhibits to be used in lay and professional information work.

Cancer Prevention Services

Exposure to carcinogenic agents is known to occur in a number of industries and occupations, resulting in a higher than normal incidence of certain types of cancer among persons employed in these locations or tasks. Misuse of carcinogenic agents such as X-ray and hormones for therapeutic or cosmetic purposes may also constitute a cancer hazard. Working with the industrial hygiene agency, the State cancer control program should enter into this field and introduce such feasible protective measures as are needed.

1. Survey industries, occupations, and other environmental factors for known carcinogenic agents.
2. Apply corrective measures through appropriate education, physical protection, medical services, legislation, regulation, and enforcement.
3. Study occupational histories of cancer cases to determine other possible environmental factors.

Case Finding Services

At the present time, alertness to cancer signs and periodic physical examinations are recognized as the most effective and most widely applicable case-finding methods. New case-finding tests and techniques should be introduced as rapidly as their value can be proved. The State can promote early case finding in many ways.

1. Prepare and distribute to physicians a pamphlet giving indications of cancer and outlining an adequate physical examination procedure.
2. Prepare and distribute to physicians physical examination forms that will help insure more thorough performance of periodic check-ups.
3. Explore the feasibility of encouraging the practice of health examinations through subsidization of diagnostic laboratory services given as part of such examinations by private physicians.
4. Train technicians and pathologists in screening and interpretation of cytologic slides.
5. Distribute information on the cytologic test to physicians, together with equipment for taking specimens and mailing tubes or envelopes.
6. Add cancer case-finding procedures to examinations at various public health clinics, including maternal and child health, venereal disease, tuberculosis, public institutions, preplacement, etc.
7. Encourage the introduction of cancer case-finding procedures in private clinic, hospital, insurance, preplacement and other examinations.
8. Help organize and support cancer diagnostic centers in communities where there is a demonstrated need for such services.
9. Sponsor or conduct research into possible new cancer case-finding tests and procedures.

Consultation Services

In many parts of the country, particularly in the rural areas, there is a dearth of qualified physicians who can advise on cancer management. Provision of consultant services to these areas will directly benefit the patient and will broaden the understanding and knowledge of the practitioner.

1. Help organize and support a system for providing consultant services to physicians in rural areas. (Example: Traveling team holding clinics for consultation purposes in rural areas.)
2. Encourage clinics and teaching centers to provide consultant services for physicians not on the staff.
3. Assist in the provision of consultant services to low income patients.

Tissue Diagnostic Services

Accurate diagnosis of cancer rests upon the microscopic examination of tissue by a pathologist. Histopathologic diagnosis should be encouraged for all suspected cancer cases where a biopsy can be taken.

1. Provide free or low cost tissue diagnostic service for low income patients through payments to private laboratories.
2. Aid the establishment of tissue diagnostic services in hospitals or medical centers by furnishing needed equipment, lending personnel, or paying salaries.
3. Prepare and distribute to physicians a pamphlet on indications for biopsy, biopsy technique, and its role in diagnosis.
4. Encourage the practice of biopsy by providing physicians with proper forceps and mailing tubes.
5. Help develop and support a tumor register for use in study and teaching.
6. Establish or support a tissue slide loan service for pathologists.

Clinic Services

Many successful cancer clinics in public and private institutions have been established as community projects and are partly or completely financed by civic groups or official health agencies. Such organizations, well staffed and properly equipped, are one of the most important cancer services.

1. Encourage hospitals to establish clinics in accordance with the recommendations of the American College of Surgeons.
2. Assist in the establishment, maintenance, and operation of clinics.
3. Help support cancer clinics through payment of fees for services to low income patients.

Hospital Services

The management of cancer requires hospitalization in most cases, if only for diagnostic purposes. A shortage of beds has often hampered prompt diagnosis and has also been an important factor in delaying treatment. This situation may be alleviated by various means such as hospital priorities for diagnosis and early treatment and providing long-term care outside the hospital wherever possible.

1. Encourage hospitals to make beds available for short periods for diagnosis and for prompt cancer treatment.
2. Pay for short-term hospitalization of low income patients for diagnostic purposes. (Use of Federal grant funds is permitted for up to 3 days' hospitalization for diagnostic purposes.)
3. Encourage hospitals to provide cancer nursing instruction and rehabilitation programs through loan of personnel, training programs, payment of salaries for instructors, and purchase of equipment.
4. Assist and encourage hospitals in the development of home care programs to reduce the demand for hospital beds by chronic cases. (Example: Montefiore home care plan.)

5. Assure adequate space and facilities for cancer clinic and facilities in hospitals constructed with Federal aid provided by the Hill-Burton Act.
6. Encourage the development of more and better nursing homes and long-term care institutions through licensing provisions and other means.

Public Health Nursing Services

The public health nursing staff is used in cancer case finding, referral, follow-up, home care and coordination of social welfare services. The State health department can:

1. Develop a public health nursing program for home care of cancer patients.
2. Develop a referral and follow-up system, using case report files as a base, to be carried out at the local level.
3. Develop a program for coordination of nursing, social welfare, and mental hygiene services for cancer patients and their families.
4. Develop a rehabilitation program for convalescent cancer patients, providing for prosthetic devices, instruction in their use, mental hygiene services, retraining, and vocational readjustment.

Program Planning and Evaluation

In the State health department, careful preliminary planning is necessary to assure best use of available resources. There is a great need for trying out and developing new control methods. Continuous evaluation of projects and methods is needed to find out whether the control activities are well run and serving a useful purpose. Furthermore, leadership by the State health department means that this department, through sponsorship of joint planning efforts, advisory services, financial assistance and demonstrations, shall encourage local agencies and nonofficial groups to take increasingly active roles in cancer control.

1. Make a continuing survey of cancer control needs and resources as a basis for program planning, including extent of the State cancer problem; available facilities and services for case finding, diagnosis and care; the extent to which they are being used; and how they could be used more effectively.
2. Evaluate adequacy and effectiveness of individual cancer control projects, including lay and professional information programs, tissue diagnostic services, clinical and hospital facilities, nursing services, and social services.
3. Operate demonstration projects in order to develop various types of service; find out whether they are effective; and show local and

nonofficial agencies how such projects may be established and operated.

Cancer control, now a recognized public health program, offers specific action techniques. Like other public health programs, it must continually be cognizant of advances in medical science which may be applicable to solution of its problems, testing and evaluating new control methods and putting them into practice whenever their usefulness is demonstrated.

Vigorous leadership by the State health agency is needed to mobilize all cancer control resources for the most efficient and effective use in minimizing the cancer problem.

Nomenclature of Strains of *C. Diphtheriae*

By K. I. Johnstone and J. W. McLeod*

One of the writers and his colleagues (*1*) have suggested a differentiation of three principal varieties in the cultural forms in which the bacillus of diphtheria is met. These forms have been described as the gravis, intermedius and mitis varieties of *C. diphtheriae*.

Although this nomenclature has been adopted by many observers, some have preferred to make similar differentiation through the use of numbers or letters in order to avoid names which they consider misleading in their implications, and others have preferred not to classify this organism in these forms (*11*, *15*). Regardless of the merits or demerits of these differing nomenclatures, confusion may arise when new terms are introduced to describe forms which do not appear to differ sensibly from those already described under other names. The following observations on the strains of bacteria recently described in the United States under the name of *C. diphtheriae* type minimus are submitted for consideration.

The term *C. diphtheriae* minimus was used by Frobisher, Adams and Kuhns (*6*) and Eller and Frobisher (*5*) to describe a form they first noticed in a predominant role in an outbreak of diphtheria more severe than those previously experienced in the city of Baltimore.

This form of the diphtheria bacillus was peculiar in appearing as very fine colonies on the media used and also in fermenting glucose very slowly. Since the former character was a constant feature of all strains described in Europe as *C. diphtheriae* type intermedius, it seemed to us desirable to compare the Baltimore strains with intermedius strains which had been isolated in Europe.

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Table 1. *Baltimore strains*

Dr. Frobisher's description and number	Appearance on blood agar tellurite medium	Fermentation	Appearance in nutrient broth	Appearance on heated blood agar+rabbit's serum	Morphology	Virulence	Classification
808 minimus	Fine, flat black colonies.	Glucose+, saccharose and starch−.	Fine granules tending to settle.	Green coloration	Markedly barred; metachromatic granules prominent.	Killed guinea pig within 30 hours.	Intermedius.
810 minimus	do	do	do	do	do	Not tested	Do.
832 minimus	do	do	As above, also a few flakes.	do	do	do	Do.
319, 405, 499, 502. Saccharose fermenting diphtheria bacilli virulent to guinea pigs.	Medium convex glossy and smooth as mitis.	Glucose and saccharose+, starch−.	Diffuse fairly copious turbidity.	Copious growth, no greenish color.	Not recorded	Killed guinea pig within 48 hrs.; characteristic lesions; control receiving antitoxin lived.	?

Table 2. *Utah strains*

Dr. Galbraith's number and classification	Appearance of colonies blood agar tellurite medium	Fermentation	Appearance nutrient broth	Appearance heated blood agar+rabbit's serum	Morphology	Virulence	Classification
Minimus (7 strains) 084, 144, 269, 272, 910, 935, 936.	Fine, flat or slightly convex black colonies.	Glucose+, sacch.+, starch−.	Deposit of fine flakes	No green coloration	Fragmented forms often almost diplococcal.	3 were tested and failed to kill.	Diphtheroid.
Minimus (4 strains) 074, 601, 931, 983.	do	Glucose+, sacch.−, starch−.	do	do	Medium to long barred forms like intermedius.	2 were tested and failed to kill.	Do.
Minimus 790	do	Glucose−, sacch.−, starch−.	Partly flocular sediment.	do	Fragmented forms often almost diplococcal.	Failed to kill	Do.
Gravis 368	Large, flat, black with radiating striation.	Glucose+, sacch.−, starch+.	Pellicle; heavy deposit of flakes and granules.	No green coloration	Not recorded	Killed guinea pig within 30 hrs.	Gravis.
Saccharose fermenters (3 strains) 77, 173, 787.	Large, smooth glossy black colonies.	Glucose+, sacch.−, starch−.	Pellicle and copious deposit with diffuse turbidity.	No green coloration	Long beaded forms	77 and 173 killed guinea pig within 48 hrs. 787 not tested.	Mitis.

Dr. Frobisher very readily put a number of these strains at our disposal as well as some others which were peculiar in fermenting saccharose but otherwise resembled *C. diphtheriae* type mitis and were virulent to guinea pigs.

Several years later, Galbraith, Fraser and Bramhall (*7*) described the appearance of minimus strains in association with diphtheria in Utah. Dr. Galbraith also kindly supplied a collection of these strains.

The features emphasized as characteristic of intermedius strains are: a fine, flat, black colony with or without a small central papilla on blood tellurite agar; a very finely granular turbidity in meat extract broth which tends to settle as a fine deposit leaving the remaining liquid clear and supernatant with no pellicle; a marked tendency to barred morphology; the production of a greenish color in heated blood agar media reinforced with 10 percent of fresh rabbit's serum (*9*); fermentation of glucose but of neither starch nor saccharose, and failure to produce hemolysis.

Tables 1 and 2 record the findings with respect to these characters for the strains received from the United States.

From these observations the following conclusions are drawn: The strains described by Frobisher as minimus are not easily distinguished from those which have been described in this country and in several others in western Europe as intermedius. The only point of divergence, which we observed, was a greater tendency in the Baltimore strains to show metachromatic granules in preparation from heated blood agar stained with Loeffler's alkaline methylene blue. The strains he described as virulent but fermenters of saccharose are apparently a variant which is either very rare in this country or has escaped observation. It was thought that these strains might be mitis strains with a very slight admixture of a saccharose fermenting diphtheroid but all our attempts to demonstrate such an admixture have failed. These attempts included the separation of four cultures grown from single cells by the method described by Goldie, Gordon and Johnstone (*8*). Each of these cultures was shown to ferment saccharose and to kill the guinea pig after producing characteristic lesions.

Frobisher's observation is obviously of great importance. The teaching that no true diphtheria strain ferments saccharose is so firmly established and based on so much careful observation (*2*), that most workers in this field have considered they were justified in discarding any strain under investigation as possible *C. diphtheriae* as soon as it proved to be a saccharose fermenter. It is possible that had all these discarded strains been investigated, a percentage of them like the Baltimore strains might have been shown to be pathogenic to guinea pigs, producing lesions characteristic of a diphtheria

Table 3

Standard appearances in recently isolated strains			Appearances on various media			Broth	Morphology	Sugars	Virulence for guinea pig*
			Heated blood tell. agar	Heated blood agar	Heated blood agar +serum				
Strain	Origin	Period elapsed since isolation	Fine, flat black colonies	Fine, flat uniform colonies	Fine, flat colonies with greenish color which disappears on 2d or 3d day as growth increases	Fine, granular turbidity tending to deposit	Barred forms predominant occasional clubbing	Gl.+ S.r St.−	Positive
A.8	Civilian in Graz, Austria.	3 years	0	0	Green color lost	0	0	0	Not doue.
A.13	do	3 years	0	0	Green color lost	0	0	0	+30.
A.51	do	3 years	0	0	Green color lost	Some coarser flocculles.	0	0	Not done.
A.80	do	3 years	0	0	Green color lost	0	0	0	Not done.
A.83	do	3 years	0	0	0	0	0	0	+<40.
16	B. A. O. R. troops in Austria.	3 years	0	Growth coarser	Green color lost	0	0	0	Not done.
23	do	3 years	0	Growth coarser	Green color lost	0	0	0	Not done.
B.22	Bergen, Norway	3 years	Growth coarser	0	Green color lost	Considerable turbidity.	Barring not marked	0	Not done.
O.11	Oslo, Norway	2½ years	Growth coarser	Growth coarser	Green color lost	Considerable turbidity.	Barring not marked	0	Not done.
Ba.810	Baltimore minimus strain.	3 years	0	0	0	0	0	0	+<40.
Ba.832	do	3 years	0	0	0	0	0	0	Not done.
L/Aitken	Leeds, England	17 months	0	0	Green color lost	0	0	0	+45.
L/214	do	>7 years	0	0	0	0	0	0	+<40.
L/410	do	>7 years	0	0	0	0	0	0	+28.

0=no change.

*Haemolytic tests had not been done with all these strains when first isolated or received. They were done, however, at the same time as the other tests recorded in this table. All were entirely negative except for a trace of haemolysis with 0.11. Control observations with 2 mitis and 1 gravis strains gave frank haemolysis.

infection but completely innocuous in control guinea pigs which had received antitoxin.

Galbraith has shown that gravis strains similar to those so widespread in Europe are playing some part in diphtheria outbreaks in Utah. The strains he describes as minimus, however, do not correspond to the intermedius or any other form of *C. diphtheriae* encountered in Europe nor to Frobisher's minimus strains. In view of their failure to kill guinea pigs, great caution should be exercised in accepting them as diphtheria bacilli. A small percentage of nonvirulent strains has been found in all cultural varieties of the diphtheria bacillus, but, when uniformly avirulent varieties differing from all others previously recognized are described, an overwhelming case must be presented before they can be accepted.

Stability of Intermedius Strains in the Human Body

There is considerable presumptive evidence for the stability of the intermedius strains of *C. diphtheriae* in the human body.

In vivo. Their stability *in vivo* is shown in two ways. First, in large areas where different types are responsible for the diphtheria prevalent, it has been observed that the strains of intermedius are found to come from one or two of the communities within the area and from nowhere else, Grossmann (*10*). Second, observations on diphtheria in closed groups of the population have sometimes revealed outbreaks continuing over weeks or months in which only this type of bacterium has been recognized. McLeod, Orr, Woodcock (*12*) record an example in which 13 consecutive cases of diphtheria due to the intermedius strain were the only cases of diphtheria recorded in a school over a period of 6 months. Croll (*4*) also records a considerable outbreak in a Royal Air Force unit in which 26 cases and 5 carriers infected with the intermedius strain were recognized in the course of a month.

An interesting feature was that cases from the latter outbreak were all returned as intermedius infection although examined in separate laboratories. One of the laboratories was remote from the others and was quite unaware of the possible connection of the case under investigation with the outbreak; the swabs from the patient's throat were taken while she was on leave (incidentally this was the only fatal case among the 26).

In vitro. It has been shown from the careful investigations by Robinson (*13*) and others that, for a considerable period of time at all events, the intermedius strains show marked stability in subculture. There is no doubt, however, that some strains after long periods give coarser growth and lose their capacity to produce the characteristic greenish tint on heated blood agar. It is also noteworthy that in rare instances it has been possible to obtain strains resembling gravis strains

from those which originally showed in part, or altogether, the characters of intermedius strains (*13, 3, 14, 8*). The work of Goldie et al. (*8*) was carried out by repeated single cell cultures to eliminate possible error due to work with mixed cultures.

In view of these findings, the extent of alteration in a collection of intermedius strains, in subculture for considerable and various periods of time and coming from widely separated areas, is recorded in table 3.

It is clear from these results that a considerable number of strains maintain their character intact over 3 or more years. The greatest number, however, lost the tendency to develop an olive green color on serum heated blood agar. A minority lost the metabolic peculiarity which checks their growth on most media.

In the recorded series these changes were most marked with the Norwegian strains.

Six of the strains were tested for virulence at the end of the period of preservation in culture and all proved fully virulent.

Conclusions

The strains received from Dr. Frobisher under the designation *C. diphtheriae* minimus are not easily distinguished from those previously described in Europe as intermedius. The strains recently described in Utah as *C. diphtheriae* type minimus do not correspond either to the Baltimore minimus or to the European intermedius and appear to be diphtheroid bacilli.

Among 14 intermedius strains collected in Europe and America and subcultured for 2½ to 7 years, 5 retained their original characters intact, 5 lost their capacity to produce an olive green color in serum heated blood agar media but showed no other change, and 4 were also producing coarser growths so that some of them approached mitis in type.

The strains Dr. Frobisher has described, which ferment saccharose but resemble *C. diphtheriae* in all other respects, retained their characters in subculture when examined in Leeds after a considerable interval of time, both directly [1] and after isolation of cultures from single cells. Their existence is a matter of importance and their distribution and significance should be further investigated.

ACKNOWLEDGMENT

We wish to express our indebtedness to R. Burrow for assistance in maintaining the strains in subculture and carrying out many of the observations described; also to the Medical Research Council for a grant-in-aid for the work.

[1] Cultures were examined as they were obtained from America without any attempt to make subcultures from separate colonies. One, or perhaps more, subculture would intervene, however, before the fermentation tests.

REFERENCES

(1) Anderson, J. S., Cooper, K. E., Happold, F. C., and McLeod, J. W.: Incidence and correlation with clinical severity of gravis, mitis, and intermediate types of diphtheria bacillus in series of 500 cases at Leeds. J. Path. & Bact. **36**: 169 (1933).

(2) Medical Research Council (Great Britain), Bacteriological Committee: Diphtheria: Its bacteriology, pathology and immunology. London, His Majesty's Stationery Office. 544 pp. (1923).

(3) Carter, H. S.: Microbic dissociation in *C. diphtheriae* by the production of daughter colonies. J. Path. & Bact. **58**: 391 (1946).

(4) Croll, J. M.: Outbreak of diphtheria at an R. A. F. Camp. Month. Bull. Min. Health & Emerg. Pub. Health Lab. Service **3**: 79 (1944).

(5) Eller, C. R. and Frobisher, M., Jr.: Outbreak of diphtheria in Baltimore in 1944. Am. J. Hyg. **42**: 179 (1945).

(6) Frobisher, M., Jr., Adams, M. L., and Kuhns, W. J.: Characteristics of diphtheria bacilli found in Baltimore since November 1942. Proc. Soc. Exper. Biol. & Med. **58**: 330 (1945).

(7) Galbraith, Ted. W., Fraser, R. S., and Bramhall, E. H.: Appearance of "minimus" type diphtheria in Utah, Pub. Health Rep. **63**: 577 (1948).

(8) Goldie, W., Gordon, M., and Johnstone, K. I.: Mutation in a single-cell culture of *Corynebacterium diphtheriae*. J. Path. & Bact. **60**: 369 (1948).

(9) Gordon, M., and Higginbottom, Constance: Medium showing distinctive green colouration with growths of *C. diphtheriae* intermedius. J. Path. & Bact. **54**: 435 (1942).

(10) Grossmann, H.: Zur Frage der Pathogenetischen und Epidemiologischen Sonderstellung der Diptheriebacillentypen. Klin. Wchnschr. **21**: 774 (1942).

(11) Hammerschmidt, Johann: Gegenwärtiger Stand unserer Kenntnisse von den Typen der Diphtheriebazillen. Centralbl. f. Bakt. **151**: 510 (1945).

(12) McLeod, J. W., Orr, J. W., and Woodcock, H. E. deC.: Morbid anatomy of gravis, intermedius and mitis diphtheria: Observations on series of 51 postmortem examinations. J. Path. & Bact. **48**: 99 (1939).

(13) Robinson, D. T.: Further investigations on the gravis, mitis and "intermediate" types of *C. diphtheriae:* Type stability. J. Path. & Bact. **39**: 551 (1934).

(14) Stoppelman, M. R. H.: On the variability of the types of *C. diphtheriae.* Antonie van Leeuwenhoek (Journal of Microbiology and Serology, Amsterdam) **14**: 173 (1948).

(15) Wright, H. A., and Christison, M. H.: Further observations on the types of *Corynebacterium diphtheriae.* J. Path. & Bact. **41**: 447 (1935).

INCIDENCE OF DISEASE

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

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED AUGUST 27, 1949

A decline, the first since June 4, was reported during the week in the incidence of poliomyelitis. A total of 3,244 cases was reported, as compared with 3,420 last week (a 5-percent decrease), 1,412 for the corresponding week last year (which number was also the 5-year median), representing an increase of 7.5 percent. Currently, decreases were recorded in five of the nine geographic areas. The figures by geographic areas are as follows (last week's figures in parentheses): New England 365 (313), Middle Atlantic 760 (799), East North Central 818 (1,034), West North Central 592 (526), South Atlantic 123 (108), East South Central 95 (107), West South Central 191 (235), Mountain 136 (147), Pacific 164 (151). Of 43 States reporting more than 9 cases, 20 showed a combined decrease of 395 cases. Those reporting more than 19 cases each are as follows: *Increases*—Maine 44 (40), New Hampshire 32 (15), Massachusetts 194 (189), Connecticut 70 (39), Wisconsin 81 (78), Minnesota 183 (136), Iowa 134 (114), Missouri 116 (103), Nebraska 51 (41), Virginia 34 (21), Washington 48 (29); *decreases*—New York 573 (601), New Jersey 122 (129), Pennsylvania 65 (69), Ohio 123 (209), Indiana 58 (70), Illinois 276 (348), Michigan 282 (329), North Dakota 50 (52), Kansas 33 (55), Kentucky 33 (42), Tennessee 31 (41), Arkansas 50 (54), Oklahoma 62 (71), Texas 69 (104), Colorado 53 (60), California 101 (115); *no change*—South Dakota 25, Idaho 33. The total for the year to date is 20,543, same period last year 11,155, 5-year median 7,792.

During the week, California reported two cases of relapsing fever and 1 case of leprosy. Diagnosis was reported changed on 1 case of psittacosis reported in North Carolina for the week ended June 18.

Deaths recorded during the week in 93 large cities in the United States totaled 7,978, as compared with 8,454 last week, 8,669 and 8,327, respectively, for the corresponding weeks of 1948 and 1947, and a 3-year (1946–48) median of 8,327. The total to date is 313,132, as compared with 314,054 for the same period last year. Infant deaths totaled 643, last week 719, corresponding week last year 692, 3-year median 711. The cumulative figure is 21,988, same period last year 22,521.

Telegraphic case reports from State health officers for week ended Aug. 27, 1949

(Leaders indicate that no cases were reported)

Division and State	Diphtheria	Encephalitis, infectious	Influenza	Measles	Meningitis, meningococcal	Pneumonia	Poliomyelitis	Rocky Mountain spotted fever	Scarlet fever	Smallpox	Tularemia	Typhoid and paratyphoid fever [a]	Whooping cough	Rabies in animals
NEW ENGLAND														
Maine				1		11	44		2				5	
New Hampshire							32						9	
Vermont				1			10		1				1	
Massachusetts	6			21	3		194		17			1	83	1
Rhode Island				2		6	15		1				2	
Connecticut				8		28	70		2				26	
MIDDLE ATLANTIC														
New York	6	1	(c)	70	4	110	573	2	[d] 20			7	194	13
New Jersey			2	25	2	50	122		7			3	68	
Pennsylvania	1	1	(c)	36	2		65		7			6	114	
EAST NORTH CENTRAL														
Ohio	2			21		35	123		16			2	72	3
Indiana	23	1	3	13	1	25	58		5			1	19	13
Illinois	1	2	3	33	2	79	276	3	11		1	7	94	
Michigan [a]	2	1	1	58		13	[f] 280		12			1	105	4
Wisconsin			13	52		2	81		3				77	
WEST NORTH CENTRAL														
Minnesota				10	4	9	183		7				4	
Iowa				5		2	134		2				2	3
Missouri			1		1	6	116		4		1	2	5	
North Dakota		22		2			50		1				1	
South Dakota		1		1	1		25					1		
Nebraska	1			4			51		5			1	1	
Kansas				2		3	33					1	7	
SOUTH ATLANTIC														
Delaware				3			4						7	
Maryland [a]	2		1	10		23	16	4	1			2	22	
District of Columbia				4		10	7						3	
Virginia	4		81	10	4	40	34	4	9		2	8	44	
West Virginia	3		3	8		2	18		5			1	7	
North Carolina [i]	20			4	1		13	5	10			1	30	
South Carolina	5		9	7	1	16	10		1				2	3
Georgia	[i] 2		5	8		20	15	1	5			8	1	3
Florida	1				1	3	6		2		1	4	6	

See footnotes at end of table.

Telegraphic case reports from State health officers for week ended Aug. 27, 1949—Continued

Division and State	Diphtheria	Encephalitis, infectious	Influenza	Measles	Meningitis, meningococcal	Pneumonia	Poliomyelitis	Rocky Mountain spotted fever	Scarlet fever	Smallpox	Tularemia	Typhoid and paratyphoid fever	Whooping cough	Rabies in animals
EAST SOUTH CENTRAL														
Kentucky	6				2	13	33					6	22	6
Tennessee	6	1	10	10		59	31	3	26		2	7	14	
Alabama	5		6	13	2	22	12	1	3			2	3	5
Mississippi [a]	13		3		1	14	19		1		1		3	
WEST SOUTH CENTRAL														
Arkansas	2	1		1	1	9	[1] 50	1	3		6	6	13	2
Louisiana	1	1	4	5		36	10		2		2	5	10	4
Oklahoma			14	3	1	10	62	1	3		2	2	6	
Texas	15	2	354	34		176	69	1	2		3	8	85	19
MOUNTAIN														
Montana			3	13	1		2		1				5	
Idaho	1		10	2			33		[d] 2			1	8	
Wyoming				1		2	9				1	1		
Colorado			9	8	1	12	53	1	3			1	5	1
New Mexico				8			14		1			4	2	
Arizona	5	2	13	5		1	13		1				16	
Utah [a]				4		1	12		1		2		20	
Nevada														
PACIFIC														
Washington	3		10	23		2	48		8			1	30	
Oregon		2		14		2	15		6				17	
California	6		8	50	3	18	101		[d] 12			3	133	4
Total	142	38	566	613	39	870	3,244	27	231		24	104	1,403	
Median, 1944–48	224	23	602	694	55		1,412	24	546	2	9	143	1,806	
Year to date 34 weeks	[1] 4,466	417	78,106	587,947	2,381	56,594	[1] 20,543	468	58,718	41	823	2,394	39,591	
Median, 1945–49	7,236 (27th)	349	192,424 (30th)	550,538 (35th)	4,512 (37th)		7,792 (11th)	428	87,385 (32d)	270 (35th)	638	2,662 (11th)	66,332 (39th)	
Seasonal low week ends	July 9		July 30	Sept. 4	Sept. 18		Mar. 19		Aug. 13	Sept. 4		Mar. 19	Oct. 2	
Since seasonal low week	698		2,239	640,340	3,225		[1] 19,597		458	51		1,934	49,624	
Median, 1943–48 [b]	1,291		2,227	585,484	6,016		7,529		1,090	353		2,187	93,714	

[a] Period ended earlier than Saturday.
[b] The median of the 5 preceding corresponding periods; for measles, meningitis, smallpox, and whooping cough the corresponding periods are 1943–44 to 1947–48.
[c] New York City and Philadelphia only, respectively.
[d] Including cases reported as streptococcal infection and septic sore throat.
[e] Including paratyphoid fever; currently reported separately, as follows: Indiana 1, Virginia 4, Georgia 4, Florida 2, Kentucky 2, Tennessee 1, Louisiana 3, Texas 1, California 1. Cases reported as Salmonella infection, not included in the table, were as follows: Massachusetts 2, New York 4.
[1] Deductions.—Diphtheria cases: Georgia—week ended July 3, 3; July 30, 4; Aug. 6, 4; Aug. 13, 1. Poliomyelitis cases: Michigan—week ended Aug. 6, 1; Aug. 13, 2. Arkansas—week ended July 30, 2. Psittacosis cases: North Carolina—week ended June 18, 1.
Leprosy: California 1. *Relapsing fever:* California 2. Alaska: Diphtheria 1, measles 5. Hawaii Territory: Measles 1, poliomyelitis 1, scarlet fever 1.

FOREIGN REPORTS

BRITISH GUIANA

Measles.—Information dated August 23, 1949, states that according to a report made by the medical authorities on August 21, 1949, 29 deaths occurred during an epidemic of measles which broke out several weeks ago among the Macushi Indians in British Guiana. The disease is now said to have spread to the south savannahs, and it is estimated that a total of 600 persons (5 to 7 percent of the savannah's population) is infected.

CANADA

Provinces—Notifiable diseases—Week ended August 6, 1949.—During the week ended August 6, 1949, cases of certain notifiable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox	1		10		16	120	2	39	16	51	255
Diphtheria					2						2
Dysentery:											
Amebic						2					2
Bacillary					1						1
Encephalitis, infectious							3	2			5
German measles			3		4	11	1	2	19	2	42
Influenza			34			2	2	4			42
Measles			6		45	76	24	172	29	112	464
Meningitis, meningococcal						2				2	4
Mumps			26		10	47	5	5	2	21	116
Poliomyelitis			6	1	43	87	4	3	6	24	174
Scarlet fever			3	3	8	17	1	1	4	3	40
Tuberculosis (all forms)	19		11	10	52	15	22	10		48	187
Typhoid and paratyphoid fever	1			3	5	5	1			1	16
Undulant fever					2						2
Venereal diseases:											
Gonorrhea	8		9	8	95	53	25	17	51	72	338
Syphilis			7	5	40	19	7	5	4	18	105
Whooping cough	1		3		64	13	2	7			90

EGYPT

El-Kantara—Typhoid fever.—Information dated August 18, 1949, states that according to reliable reports received at Port Said an outbreak of typhoid fever had been noted at El-Kantara, a town on the Suez Canal about 70 miles south of Port Said, and on the railway junction between Egypt and Palestine. The outbreak is said to have originated in Palestine refugee camps located in and around the town. About 60 cases had been registered at Kantara. No deaths had been reported.

FINLAND

Notifiable diseases—June 1949.—During the month of June 1949, cases of certain notifiable diseases were reported in Finland as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	9	Paratyphoid fever	196
Diphtheria	96	Poliomyelitis	5
Dysentery	2	Scarlet fever	215
Gonorrhea	710	Syphilis	56
Malaria	4	Typhoid fever	10

JAPAN

Notifiable diseases—5 weeks ended July 30, 1949, and accumulated totals for the year to date.—For the 5 weeks ended July 30, 1949, and for the year to date, certain notifiable diseases were reported in Japan as follows:

Disease	5 weeks ended July 30, 1949		Total reported for the year to date	
	Cases	Deaths	Cases	Deaths
Diphtheria	881	79	9,321	950
Dysentery, unspecified	4,867	1,417	7,531	2,119
Encephalitis, Japanese "B"	11	6	16	8
Gonorrhea	18,135	----	110,408	----
Influenza	100	----	1,777	----
Malaria	896	11	2,466	35
Measles	20,146	----	147,570	----
Meningitis, epidemic	129	38	908	258
Paratyphoid fever	318	19	1,241	53
Pneumonia	8,919	----	100,436	----
Scarlet fever	426	6	2,993	42
Smallpox	6	1	122	12
Syphilis	18,058	----	121,146	----
Tuberculosis	50,397	----	276,576	----
Typhoid fever	873	92	3,310	392
Typhus fever	9	1	92	7
Whooping cough	20,927	----	68,092	----

NOTE.—The above figures have been adjusted to include delayed and corrected reports.

NORWAY

Notifiable diseases—May 1949.—During the month of May 1949, cases of certain notifiable diseases were reported in Norway as follows:

Disease	Cases	Disease	Cases
Anthrax	1	Malaria	1
Cerebrospinal meningitis	8	Measles	2,983
Diphtheria	16	Mumps	667
Dysentery, unspecified	1	Paratyphoid fever	4
Encephalitis, epidemic	1	Pneumonia (all forms)	2,371
Erysipelas	346	Poliomyelitis	4
Gastroenteritis	2,814	Rheumatic fever	111
Gonorrhea	294	Scabies	1,460
Hepatitis, epidemic	100	Scarlet fever	515
Impetigo contagiosa	2,000	Syphilis	65
Influenza	2,572	Tuberculosis (all forms)	379
Laryngitis	10,258	Weil's disease	3
Lymphogranuloma inguinale	1	Whooping cough	4,480

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

NOTE.—The following reports include only items of unusual incidence or of special interest and the occurrence of these diseases, except yellow fever, in localities which had not recently reported cases. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

India—Madras.—Cholera has been reported in the city of Madras, India, as follows: Week ended August 13, 1949, 52 cases, 4 deaths; week ended August 20, 38 cases, 4 deaths.

Plague

Basutoland.—Plague has been reported in Basutoland as follows: Week ended June 18, 1949, 4 cases, 3 deaths, in Mafeting District; week ended July 2, 1 fatal case in Mohale's Hoek District.

Belgian Congo—Stanleyville Province.—On August 12, 1949, 1 fatal case of plague was reported in Pimgo Village, Stanleyville Province, Belgian Congo.

Madagascar.—During the period July 21–31, 1949, 4 fatal cases of plague were reported in Madagascar.

Union of South Africa—Cape Province.—During the week ended August 13, 1949, 1 case of plague was reported at Rooiwal Farm in Gordonia District, and 2 suspected cases at Petwick Farm in Vryburg District, Cape Province, Union of South Africa.

Smallpox

Afghanistan.—During the period May 25–June 29, 1949, 52 cases of smallpox were reported in Afghanistan.

Arabia—Aden.—On August 22, 1949, 2 cases of smallpox were landed at Aden from a ship that arrived at that port from Batavia.

Portugal—Oporto.—During the week ended July 16, 1949, 1 case of smallpox was reported at Oporto, Portugal.

Typhus Fever

Afghanistan.—During the period May 25–June 29, 1949, 82 cases of typhus fever were reported in Afghanistan.

British East Africa—Tanganyika.—Dar-es-Salaam.—During the week ended July 9, 1949, 1 case of typhus fever was reported in Dar-es-Salaam, Tanganyika, British East Africa.

Yellow Fever

French Equatorial Africa—Bangui.—During the week ended August 20, 1949, 1 fatal suspected case of yellow fever was reported

in Bangui, French Equatorial Africa. The last previous report of yellow fever in French Equatorial Africa was made in December 1946, of cases occurring in Carnot, Ubangi Shari Department.

Peru—San Martin Department.—On June 23, 1949, 1 death from yellow fever was reported in Tarapoto, San Martin Department, Peru.

DEATHS DURING WEEK ENDED AUG. 20, 1949

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Aug. 20, 1949	Corresponding week, 1948
Data for 94 large cities of the United States:		
Total deaths	8,529	8,115
Median for 3 prior years	8,115	
Total deaths, first 33 weeks of year	307,814	307,980
Deaths under 1 year of age	725	621
Median for 3 prior years	686	
Deaths under 1 year of age, first 33 weeks of year	21,635	22,128
Data from industrial insurance companies:		
Policies in force	70,242,785	70,951,356
Number of death claims	11,877	11,496
Death claims per 1,000 policies in force, annual rate	8.8	8.5
Death claims per 1,000 policies, first 33 weeks of year, annual rate	9.4	9.6

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