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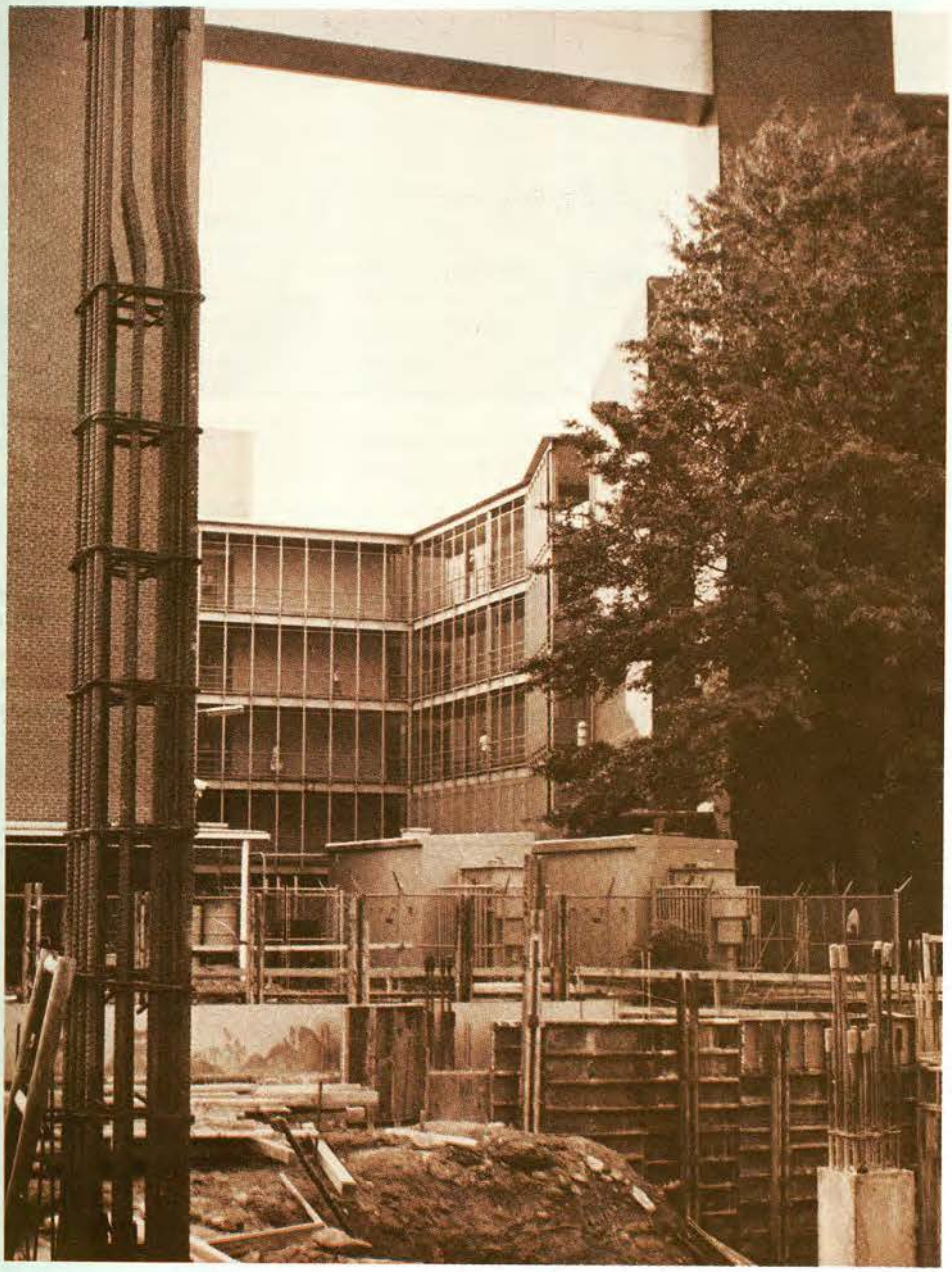
CDC: Forty Years of Prevention



Steel and concrete climb before the catwalk as CDC's new virology building goes up. Maximum containment equipment and facilities will help CDC scientists do viral research for health problems of the 21st century.

"It will take more than high technology to realize the vision of a world living in peace and health during the twenty-first century . . . The priorities set today and the actions taken during the next 15 years will be the foundation for a society that can either nurture or destroy the essential elements of our humanity. The end result must be a vision of health in mind and body for the citizens of the world in 2000."

James O. Mason, M.D., Dr.P.H.,
Director, Centers for
Disease Control
"Visions of the Year 2000"
American Journal of
Preventive Medicine
Volume 1, Number 1, 1985

Forty years ago, the Communicable Disease Center evolved from a small program to control endemic malaria in the United States. Mark Hollis, Chief of CDC in 1946, faced questions of priorities and reallocation of resources, but the questions differed from those of the 1980s. Organ transplants were unheard of. A simple, inexpensive and effective oral rehydration fluid for use in emerging nations was decades away. Typhus was a disease to be reckoned with and the Public Health Service decided to take Joseph Mountin's advice and establish a center of excellence to work with state and local health officials in the battle against communicable diseases.

Speaking of the Center, Dr. Justin Andrews, its Deputy Chief said, in 1946: "The Communicable Disease Center of the United States Public Health Service was inaugurated . . . for the field investigation and control of communicable diseases. The Center,

(See page 2)

Prevention Philosophy Prevails as CDC Grows

(from page 1)

located in Atlanta, Ga., will continue certain training and investigation functions of the Office of Malaria Control in War Areas, which it replaces, and in addition will deal with a special phase of communicable disease prevention not now provided as federal services . . ."

In the early 1940s, there was a shortage of specialists skilled in the diagnosis, management, and prevention of such diseases as malaria, dengue, schistosomiasis, filariasis, Japanese B encephalitis, and other diseases of the Pacific.

About this shortage, Dr. Andrews continued, "Insofar as such situations are preventable, they should not be allowed to develop. The best way to forestall them is to foster training, investigations, and control technology as continuing and permanent elements under federal auspices."

Those words described for history the Center's philosophy of prevention and the working pattern of CDC.

For 30 years after it was founded, CDC was in the forefront of the first public health revolution. The benefits of that revolution have been many. Infectious diseases are no longer primary causes of death and illness in the United States. Vaccine preventable childhood diseases are at historic low levels. Infant mortality has dropped among the population as a whole. Maternal mortality has declined. Americans live longer than ever before and live in better health.

The third decade passed and CDC confronted a new revolution. Premature or unnecessary illness and death had not disappeared. Causes for illness and death changed—but the causes were still preventable. Heart disease, cancer, and stroke, often linked to lifestyle choices or working conditions, became primary causes of needless loss of life. Injuries and violence cost the nation many lives each year.

The Communicable Disease Center became the National Communicable Disease Center in 1967 and the Center for Disease Control in 1970. CDC's job, since the mid-1970s, has been to prevent premature loss of life and disability, whatever its cause—and by doing this, to improve the quality of life lived by people all over the globe.

Quarantine inspectors met ferries, ships and planes in the early 1960's to protect the U.S. from imported disease. Shown is a ferry crossing at Rio Grande City, Texas in 1960.

To handle expanded responsibilities, CDC needed a new plan for action. In 1977, several hundred organizations and individuals representing a variety of prevention and public health interests responded to a request asking what CDC's broad programs should be in order to prevent or reduce unnecessary morbidity and mortality.

Following analysis of that response, an advisory group of public health professionals from outside CDC was asked to recommend more specific future policies and programs. The external committee examined current trends in morbidity and mortality in the United States; examined public health problems in relation to their susceptibility to prevention programs, and on the basis of that susceptibility, were asked to give each listed public health program a high, medium, low, or no priority.

Recommendations from this group were further developed by senior CDC staff at two planning conferences.

At about the same time, under the leadership of the Surgeon General of the Public Health Service, the policy document, "Healthy People: the Surgeon General's Report on Health Promotion and Disease Prevention," was released. "Healthy People" summarized the current epidemiologic picture of health in the United States, described current risks to health, described actions that might improve the nation's health, and established 15 health goals to be reached by 1990.

Two additional documents completed the framework for a national plan for prevention—"Model Standards for Community Preventive Health Services" and "Promoting Health/Preventing Disease—Objectives for the Nation."

On Oct. 1, 1980, CDC was reorganized to bring its structure in line with the overall plan for disease prevention. It was renamed the Centers for Disease Control.

CDC: Perspectives on 40 Years

In 1986 the CDC organizational structure consists of the National Institute for Occupational Safety and Health, the Center for Environmental Health, the Center for Health Promotion and Education, the Center for Infectious Diseases, and the Center for Prevention Services. The Center for Professional Development and Training is being merged with the Laboratory Program Office to form the Training and Laboratory Program Office. Other program offices are the Epidemiology Program Office and the International Health Program Office.

In another proposed action, the Center for Environmental Health is expanding to include activities related to CDC's major new program in injury prevention and will be renamed the Center for Environmental Health and Injury Control.

Since 1979, CDC has coordinated activities to protect the public's health in face of exposure to toxic chemicals persistent in the environment. At the same time CDC was asked to establish a response system to handle emergency situations involving radiation and chemicals—for example, spills during transport, fires, and other incidents. CDC has special resources to meet this demand: experience in environmental epidemiologic investigations; experience with environmental health operational programs; staff who are active in surveillance of congenital malformations, and specialty laboratories in toxicology, clinical chemistry, and genetic diseases.

Working with CEH in many of these areas is the Agency for Toxic Substances and Disease Registry, mandated by Congress to do site consultations, health assessments and studies, emergency response, and information dissemination related to Superfund sites.

In 1985, CEH reorganized into five divisions: Birth Defects and Developmental Disabilities; Chronic Disease Control; Injury Epidemiology and Control; Environmental Health Laboratory Sciences; and Environmental Hazards and Health Effects.

These divisions correspond with current program priorities: (1) *Prevention of birth defects and protection of maternal health*—about 20 percent of all years per life lost occur from birth defects and perinatal conditions, many of them preventable; (2) *Prevention of chronic diseases*—a major initiative in the control of chronic diseases will get underway Sept. 9-11 with a national conference to develop consensus and priorities for activities at all levels of the public health community to reduce cancer, heart disease, stroke and other major chronic diseases; (3) *Injury prevention*—injury epidemiology and control will impact on violence, alcohol-related injury, and injuries to Americans of all ages from other causes in an effort to mitigate one of the Nation's most serious threats to health; (4) *Improvement of laboratory programs*—development of laboratory methodology in environmental health problems is the foundation for future progress; (5) *Prevention of exposure to toxic substances*—surveillance and research related to such substances as arsenic, lead, dioxin, and pesticides are essential to prevention of natural and man-made disasters.

With new emphasis on environmental interventions to prevent injury, chemical exposures, and birth defects, CDC is reaffirming one of its earliest prevention strategies—environmental intervention against malaria.

Since 1979, CDC has coordinated activities to protect the public's health in face of exposure to toxic chemicals persistent in the environment.

The Center for Infectious Diseases combines some of the epidemiology, laboratory and research functions which existed in earlier Bureaus of Epidemiology, Laboratories and Tropical Diseases. Infectious disease challenges still appear as new vehicles transmit already recognized agents; new disease-causing agents emerge, and microorganisms become more resistant to chemotherapeutic agents. There are resources available to adapt to new battles. Technology development and the use of powerful new tools of biochemistry and molecular biology allow CDC to supplement conventional procedures in identifying and classifying disease-causing organisms. Such techniques as analysis of cellular fatty acids and cell components and computer-assisted analysis of bacterial proteins offer opportunity to improve and automate these procedures. New instrumentation and techniques also make possible direct and rapid diagnosis of bacterial diseases by detection of tiny quantities of specific bacterial metabolites present in body fluids.

Louis Pasteur opened the gateway

(See page 26)

Exhibit traces the history of public health laboratories, including microscopes, slides and urine sugar test kits from various time periods.

The First Decade

1946

- Communicable Disease Center (CDC) established; headquarters located outside Washington, D.C. in the deactivated Office of Malaria Control in War Areas in Atlanta, Georgia. Employed physicians, engineers, and biologists who had obtained training and skill with MCWA. Responsibilities expanded to include typhus* and other vector-borne diseases in addition to malaria
- total staff: 369. budget: $1,040,000
- chief: Mr. Mark D. Hollis
- deputy chief: Dr. Justin Andrews

1947

- new chief: Dr. Raymond A. Vonderlehr
- Emory University deeds 15 acres on Clifton Rd., N.E., Atlanta, to CDC. CDC employees collect $1.00 cash as token payment for legal transfer
- Division of Epidemiology established when plague control transferred to CDC
- Veterinary Public Health Division established
- initiation of National Malaria Eradication Program, to evaluate progress toward eradication of endemic malaria and to provide information on program planning and surveillance

1948

- *Public Health Advisor program initiated

1949

- CDC employees start SHARE, Inc., and the CDC Federal Credit Union

1951

- *Epidemic Intelligence Service established
- national disease surveillance systems development begins
- field stations established at Wenatchee, Washington, to study effect of environmental poisons on humans; at San Juan, Puerto Rico, to study tropical diseases
- Midwestern CDC Services renamed Kansas City Field Station
- with the rapid decline of morbidity and mortality from malaria in the United States, CDC begins to withdraw active participation in field operations for malaria control

1952

- new chief: Dr. Justin M. Andrews
- new deputy chief: Dr. Vernon Link
- field station established at Greeley, Colorado, to study arthropod-borne encephalitis
- CDC terminates active support of field operations (spraying) for malaria control; places emphasis on surveillance, a shared responsibility with the states

1953

- new chief: Dr. Theodore J. Bauer
- PHS and CDC become part of newly created Department of Health, Education, and Welfare (PHS formerly attached to Federal Security Agency)

1954

- EIS expanded considerably in size
- field station established at Logan, Utah, to study vector ecology and encephalitis
- National Rabies Control Activities Unit established

1955

- Polio Surveillance Unit established because of nationwide epidemic of vaccine-associated poliomyelitis
- *fluorescent antibody test: CDC scientists demonstrate diagnostic potential for rapidly identifying bacterial and viral pathogens

** in timeline indicates more information in this issue.*

Public Health Advisors

In 1948, six recent college graduates were hired by the federal government and loaned to the Maryland State Health Department to solve a critical staffing problem that hindered efforts to control venereal disease. They were first categorized as health program representatives, and later were called public health advisors (PHAs).

When the Venereal Disease Program moved to CDC in 1957, many public health advisors came with it. Today, CDC has 687 PHAs—120 in Atlanta and 540 assigned to state and local health departments or to countries throughout the world. Their job series, GS 685, has more employees than any other classification at CDC and is also widely used by other agencies of the Public Health Service. PHA's are involved in traditional areas of infectious disease control and also in the broad spectrum of other public health concerns: refugee programs, environmental catastrophes, and chronic disease programs.

From the specific development of venereal disease (VD) representatives, the PHA series has evolved as a career system which develops public health managers with both management skills and extensive, in-depth program experience. CDC managers who have moved up the public health advisor career channel include former deputy direc-

Don Stenhouse and other public health advisors gave field testing during the 1976 swine flu immunizatio

1946

1946
- **World's first all electronic digital computer**

1948
- **indigenous malaria occurring only in the states of Alabama, Georgia, Mississippi, and South Carolina**

World

tor William C. Watson, Jr.; Billy Griggs, Assistant Director of CDC for International Health and Director of the International Health Program Office; Tom Ortiz, Assistant to the Director of CDC for Field Activities; Elvin Hilyer, Associate Director of CDC for Policy Coordination; Dennis Tolsma, Director, Center for Health Promotion and Education; and many others.

Traditionally, those in the PHA series enter the program as sexually transmitted diseases intervention staff. They gain broad-based experience conducting and managing public health programs at the state and local level. They move frequently from assignment to assignment. PHA's average a move in location every two years during their first eight to 10 years. They develop great flexibility in responding to time-limited health problems—such as those surrounding the eruption of Mt. St. Helens and the Three Mile Island accident. They move into management at CDC, the states, regional offices, and other parts of the Department of Health and Human Services.

Windell R. Bradford, Assistant Director of the Center for Prevention Services and a public health advisor graduate, names two particular places the PHA system has made an important difference in CDC programs:

(1) "The Smallpox Eradication Program—PHA's were an integral part of the effort, and their skills and availability helped make it go. (2) The availability of PHA's to respond overnight to organize and manage programs in emergency and other short-term situations. Their flexibility and general operational expertise make them invaluable in our ability to address emerging public health problems."

injections of flu vaccine to CDC employees as part of campaign.

Epidemic Intelligence Service

Thirty-five years ago, Dr. Alexander Langmuir began the Epidemic Intelligence Service (EIS) to develop a cadre of field-trained epidemiologists able to meet national needs.

The first EIS officers concentrated primarily on investigations of acute infectious disease outbreaks. Today, the scope of interest includes acute and chronic infectious and non-infectious diseases, nutrition, reproductive health, environmental pollution, mental health, and occupational health.

More than 50 trainees enter the two-year EIS program annually. Following completion of a three-week course in epidemiology and biostatistics, EIS officers are assigned at CDC, state or local health departments, or universities as consultants.

Each spring, former and current EIS officers can attend a one-week conference to keep abreast of the latest developments in epidemiology. During this open-scientific conference, EIS officers are allowed 10 minutes to present investigations conducted during the past year. Another 10 minutes are allowed for discussion from peers.

Fluorescent Antibody Test

Two CDC researchers did initial work which launched the Fluorescent Antibody (FA) technique for use in parasitology. Principles of the direct FA technique include: 1) dyeing a reagent that contains only those antibodies to a particular disease in question; 2) applying the dyed reagent to a tissue sample so that the dyed antibodies can attach to any of the particular disease organism that is present; 3) after washing the tissue to remove any free antibodies, examining the tissue under a colored light that "excites" the dye and makes it fluoresce, thereby locating organisms that have fluorescing antibodies attached to them.

The indirect FA technique is similar except that antibodies in tissue are identified by dyeing the organism and applying it to tissue that is expected to contain antibodies to it.

Over the years CDC researchers have played a large part in standardizing procedures for preparing reagents with the dyeing process. CDC has developed standards for dyes to be used, trained laboratory workers in FA technique, and developed specific reagents and instructions for using them for many different diseases.

In 1977, CDC made history in using the FA technique to identify legionella, the causative agent of Legionnaires' Disease. It provided state labs with first reagents for legionella.

Dr. Alexander Langmuir, founder of the EIS, at CDC in 1976 to celebrate the Center's 30th Anniversary with informal visits, barbecue and ceremony.

Typhus

In 1946, researchers reported isolation of the agent that causes human louse-borne typhus from flying squirrels captured in Florida and Virginia. No cases of louse-borne typhus had been reported in the United States for more than half a century and animals were not considered to be reservoirs of this disease.

In the late 1970s, the CDC rickettsiology laboratory tested serum specimens from patients with typhus-like illness and confirmed that typhus fever does occur in the United States in association with flying squirrels. Most of the typhus cases occurred in the eastern United States. The precise mechanism of transmission to humans is not known. Fleas and lice from flying squirrels were found to be infected with the agent, but most patients did not report insect bites prior to the onset of their illness.

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time line

1952
- **indigenous malaria cases drop to a few reported cases**

1955
- **polio vaccine released for distribution**

1955

The Second Decade

1956

- new chief: Dr. Robert J. Anderson
- new deputy chief: Dr. C. A. Smith
- total budget: $6,010,250 total personnel: 757

1957

- first year with no indigenous malaria cases reported
- Asian flu pandemic begins—CDC serves as Reference Center for the Americas in the WHO international network of virus laboratories
- Venereal Disease Control Grant-in-Aid Program transferred to CDC

1960

- new chief: Dr. Clarence A. Smith
- new deputy chief: Dr. Alan W. Donaldson
- CDC headquarters on Clifton Rd. completed and occupied (administrative and program offices, laboratories, library, computer services area)
- tuberculosis program transferred to CDC

1961

- **Morbidity and Mortality Weekly Report* (MMWR) transferred to CDC

1962

- new chief: Dr. James L. Goddard
- Medical Audiovisual Branch established (moved from Training Branch)
- National Laboratory Improvement Program established to upgrade laboratory performance and to promote increased standardization
- infectious and viral disease laboratories, auditorium, and cafeteria completed at Clifton Road site

1963

- Immunization Assistance Grant Program established
- CDC administers Vaccination Assistance Act through project grants
- smallpox unit established in Bureau of Epidemiology
- EIS officer in North Carolina involved in describing Reye syndrome
- first jet injector studies—Tonga
- GSA purchase of additional 4.974 acres for Clifton Road facility

1964

- new deputy chief: Dr. David J. Sencer
- *Immunization Practices Advisory Committee (ACIP) holds first meeting at CDC; established to provide advice and guidance to Secretary and Assistant Secretary for Health and Director of CDC on the appropriate use of biologics and other preventive medical agents for effective disease control in the civilian population
- Research Grants Activity established
- Hospital Infections Unit established as part of epidemiology program
- animal breeding and holding facilities constructed in Lawrenceville
- First Lady "Ladybird" Johnson (Mrs. Lyndon B.) breaks ground for additions to CDC headquarters

1965

- *CDC undertakes goal of eradicating smallpox in 20 West and Central African countries
- Anapa, Brazil: first use of jet injector in smallpox endemic area

MMWR Anniversary

1986 is the 35th anniversary of the MMWR's publication under that name. National morbidity reporting began in 1893, when an Act was passed providing that state and municipal authorities report information weekly about certain diseases to the Public Health Service (PHS). In 1902, Congress passed a law directing the Surgeon General of the PHS to provide forms to standardize morbidity statistics. After a slow start, all states were reporting regularly by 1925.

Until 1942, statistics were compiled by the Division of Sanitary Reports and Statistics of PHS; after that time the job was done by the Division of Public Health Methods. Seven years later (1949) the responsibility was transferred to the National Office of Vital Statistics of PHS. In 1961 the report moved to CDC, where it began publication under auspices of the Epidemiology Branch as an extension of its surveillance activity. The Epidemiology Branch could then take action on the basis of information collected and analyzed.

The MMWR is now published by the Epidemiology Program Office. Major medical journals increase its circulation to a worldwide audience by carrying MMWR articles as regular features. It is available throughout the nation on the CDC electronic bulletin board circulated by MINET, the computerized Medical Information Network of the AMA.

ACIP and Immunization

The ACIP was established to regularly evaluate the use of vaccines and other immunizing agents available for prevention and control of diseases in this country and elsewhere. Its recommendations are based on evaluation of the risks and benefits of available biologics and of their applicability in contemporary health practice. ACIP recommendations also take into account the delivery mechanisms necessary to promote immunization activities in a system consisting of private medicine, public health, and voluntary health groups.

Committee members are selected primarily from the medical community. The committee meets at CDC three times each year.

1956

1962
- **Congress passes Vaccination Assistance Act**

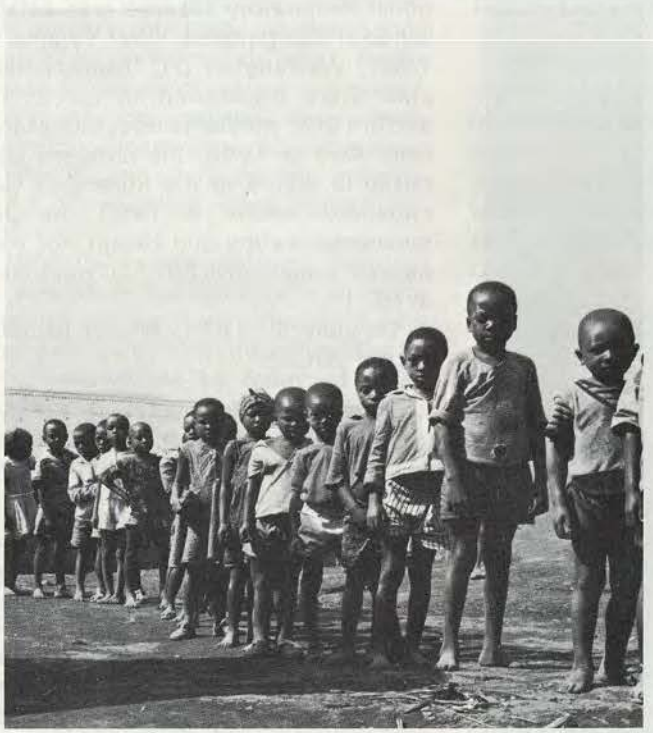
1963
- **Reye syndrome first described**

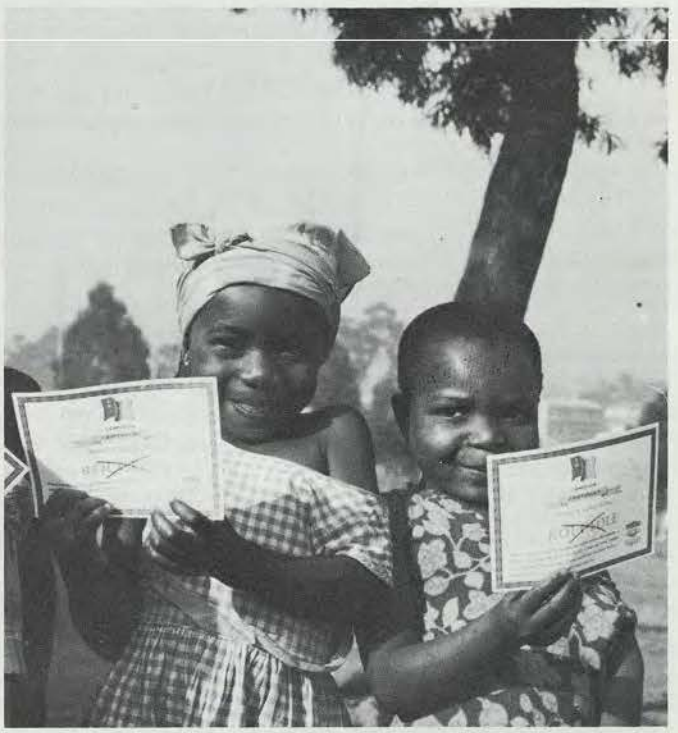
Smallpox

Smallpox, a severe viral disease, haunted mankind for several thousand years. Its impact on the history of the world was enormous. From late 1965 to early 1966, CDC made arrangements to undertake smallpox eradication in 20 West and Central African countries. Congo and Nigeria were the last of the 20 countries to eradicate smallpox in 1970.

CDC's relentless pursuit of the global eradication of smallpox continued well into the 1970's. In 1975, smallpox was finally eradicated from India and Bangladesh. The last endemic case of smallpox in the world occurred in Somalia in October 1977. From 1965-1977, CDC's smallpox laboratory developed an internationally-recognized reputation for rapid diagnosis of smallpox.

Since 1977, CDC has played a major role in discovering West African cases of monkeypox virus, a disease which closely resembles smallpox. The CDC smallpox laboratory's research revealed that human monkeypox does not constitute a public health problem.





"White Whales" roamed Africa during the international smallpox campaign taking measles and smallpox vaccine to children and their families. They provided a link with home and necessary supplies for field-workers—including certificates of vaccination.

1964
- **ACIP established under Section 222 of the PHS Act**

1965

The Third Decade

1966

- new chief: Dr. David J. Sencer
- total budget: $66,545,000. total personnel: 3,463
- malaria eradication program established
- immunobiologics activity established for stockpiling and distributing certain rare vaccines to persons whose occupations place them at high risk of infection
- Smallpox Eradication Program established to manage AID-funded Smallpox Eradication/Measles Control Program in 20 African countries
- animal laboratory, auditorium, classrooms, warehouse/shop additions at Clifton Road site completed, increasing space by 105 percent
- CDC installs first computer system (16,000 characters of memory); used to implement batch, business-oriented applications

1967

- "Chief", CDC, becomes "Director"
- new deputy director: Dr. John R. Bagby
- CDC renamed National Communicable Disease Center (NCDC)
- Foreign Quarantine Division transferred to CDC
- Office of Program Planning and Evaluation established to develop long-range plans, evaluate progress toward program goals and objectives, develop legislative proposals, and assess the implications of Congressional actions on NCDC's programs
- NCDC gains responsibility for development and implementation of standards relating to personnel, quality control, and proficiency testing in response to laboratory improvement legislation

1968

- NCDC becomes a bureau within the PHS
- State and Community Services Division established, combining venereal disease, tuberculosis, and immunization branches
- *first major initiative in famine relief in Africa—Nigeria

1969

- Clinical Laboratory Licensure Activity established
- laboratory additions to Clifton Road site completed
- *CDC epidemiologists help describe Lassa fever with recognition of cases in Nigeria

1970

- NCDC renamed Center for Disease Control (CDC) to reflect its broader mission in preventive health
- new deputy director: Dr. James O. Mason
- nutrition program established
- studies of simultaneous administration of six antigens to Nigerian children
- Immunization Action Month initiated

1971

- NIOSH established; one activity is hazard evaluations of *indoor air quality in a variety of office building environments
- *routine immunizations and vaccination requirements for smallpox discontinued in U.S.
- hepatitis B first found to be sexually transmitted

1972

- National Clearinghouse for Smoking and Health transferred to CDC
- national gonorrhea control program established
- CDC headquarters installs new computer (with about the same computing power as today's PC)
- NIOSH recommends criteria for controlling occupational exposure to asbestos; leads to issuing of exposure standard by OSHA

1973

- CDC becomes an agency of the PHS
- *NIOSH becomes part of CDC; locates headquarters in Rockville, Md.; first discovers asbestos as a hazard in public schools
- CDC begins regular response to crisis abroad—famine in sub-Saharan Africa
- Office of Biosafety established
- lead-based paint poisoning prevention and urban rat control activities transferred to CDC
- GSA purchase of additional 0.564 acres at CDC Clifton Road facility
- CDC documents first nationwide outbreak of Reye syndrome

1974

- new deputy director: Mr. William C. Watson, Jr.
- *work begins on SENIC project (nosocomial infection control)
- Bureau of Health Education established (smoking and health becomes part of it)
- program administration and cafeteria annex additions to Clifton Road site completed
- *NIOSH begins coordinated effort with OSHA to substantially expand occupational health standards for more than 350 toxic substances; publishes criteria document on controlling exposure to liver carcinogen vinyl chloride

NIOSH History

In 1914, the Office of Industrial Hygiene and Sanitation was established in Pittsburgh, Pennsylvania. Its activity was dedicated, for the most part, to controlling hazardous exposures in such dusty trades as granite work.

In 1937, the program was merged with the Office of Dermatose Investigations as the Division of Industrial Hygiene within the newly created National Institutes of Health. In 1939, it moved its staff to Bethesda, Maryland. The division was active during World War II in protecting workers in the war industries and had established a massive network of industrial hygiene programs at state and local levels. In 1944, it became part of the Bureau of State Services.

In 1947, the division moved its offices to Washington D.C. In 1949, to assist the western states, the division established a field station near Salt Lake City, Utah. In 1950, the division established its field headquarters in Cincinnati. In 1960, the mission of the division was targeted at investigating the growing number of chemicals and assisting environmental programs with the knowledge that was acquired.

In 1966, as part of the division, the Appalachian Laboratories for Occupational Respiratory Disease was established in Morgantown, West Virginia. In 1967, Washington D.C. headquarters staff were transferred to Cincinnati, and in 1968, moved to Rockville, Maryland. Also in 1968, the program was raised in status to the Bureau of Occupational Health. In 1970, the Occupational Safety and Health Act was passed, creating NIOSH 120 days later in 1971.

On July 1, 1973, NIOSH became part of CDC.

Cost-effective Prevention

The United States invested about $32,000,000 in eradicating smallpox. Before 1971, the United States was spending that amount every three months for routine smallpox immunizations, for complications of routine immunizations, and in quarantine inspections at ports and international airports. By 1971, there was so little smallpox in the world that routine immunizations

1966

1966

- **WHO Assembly calls for intensified smallpox eradication program**

1967

- **passage of Clinical Laboratories Improvement Act; President's Committee on**

CDC teams examined adults and children in the Sudan during an assessment to determine populations for greatest risk of under-nutrition or malnutrition following drought of the 1980's. Information gathered is used to plan for famine relief in Africa.

Air Quality Investigations

Since 1971, the Hazard Evaluations and Technical Assistance Branch of NIOSH has conducted more than 350 indoor air quality investigations in a variety of office buildings. More than 90 percent of these investigations were done in the last six years. An increase in complaints about interior environments has paralleled the increase in energy conservation practices used in the design, operation, and maintenance of new and existing office buildings.

Workers' health problems seem to be related to the workplace air since symptoms normally disappear on weekends away from the office. The illness experienced by many of these workers is severe enough to result in lost work time, reassignment, and even loss of job. Although NIOSH data indicate that this problem is multifactorial in nature, information collected to date suggests that inadequacies of ventilation systems are the major cause of indoor air quality problems.

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and vaccination requirements for smallpox could be eliminated—resulting in a saving since then of almost two billion dollars.

Famine Assistance

Almost since its beginning, CDC has offered technical expertise to other nations in crisis situations—famine, refugee health, natural and man-made disasters.

Beginning in 1968 during the Biafran war in Nigeria, a large number of epidemiologists began serving temporary assignments in that area of West Africa to conduct nutrition and disease assessments and assist local health officials in other health crises related to the civil war.

Since 1973, CDC has responded regularly to requests for assistance from the Department of State and the Agency for International Development (AID) in documenting the severity and impact of severe drought and resultant famine occurring in sub-Saharan Africa. These epidemiologic assessments, which have taken place on an almost annual basis since that time, delineate by relatively simple, inexpensive, and objective measures, the geographic distribution and prevalence of protein-energy malnutrition in these drought-afflicted countries and provide data for decision-making and food and relief supply allocation.

Nosocomial Infections

CDC has been involved in nosocomial infection control efforts since the mid-1950s, when epidemiologists began to assist hospital personnel around the country in investigating outbreaks of hospital infection. In 1964, CDC established its Hospital Infections Unit as part of the Epidemiology Branch.

In 1970, CDC established the National Nosocomial Infections Study, which monitored trends in nosocomial infection rates. In 1974, work began on the Study on the Efficacy of Nosocomial Infection Control (SENIC) Project, with the objective of determining whether CDC's recommended approach to hospital infection surveillance and control was effective in reducing nosocomial infection rates.

Results of the SENIC study showed that approximately 32 percent of all hospital infections that would otherwise occur could be prevented by well-organized and appropriately-staffed programs.

NIOSH/OSHA Standards

This 1974-1976 program was designed to substantially expand occupational health standards for more than 350 toxic substances through a coordinated effort by NIOSH and the Occupational Safety and Health Administration (OSHA) in the Department of Labor. The standards were designed to reduce and prevent occupational disease and illness in more than 95 percent of American workers covered under the 1970 Act.

This was the first major federal effort focused on preventing occupational diseases and injuries in the United States. The ambitious and complex program met all production deadlines and hundreds of technical standards were forwarded to OSHA by the end of 1976. The program made significant fundamental contributions to worker protection and to the profession of occupational health.

Many of the innovative concepts and much of the information developed during the program are still used by NIOSH as the basis for disease prevention guidelines that are widely disseminated. Substantial and lasting contributions were made to the number and quality of monitoring methods for worker exposure to hazardous substances.

Lassa Fever

Lassa fever is an acute viral illness occasionally resulting in a fatal hemorrhagic disease in West Africa. In 1969, CDC epidemiologists helped describe this disease with the appearance of some cases in Nigeria.

An in-depth CDC study on Lassa fever, begun in 1977, showed that the disease is much more common in West Africa than previously believed, with 100,000 annual infections. The drug ribavirin was found to be effective in treating Lassa fever and reducing the mortality in hospitalized patients.

Recent studies have shown that extensive rodent trapping in highly endemic villages may significantly reduce virus transmission. Laboratory studies at CDC have resulted in the production of monoclonal antibodies to Lassa virus, which have assisted in improved diagnosis of Lassa fever.

Health Education convened to address the need for health education in Federal government; Biafran War begins, Nigeria

1970 • Urban Rat Control Program funded by Congress for $15 million; NIOSH authorized with passage of Occupational Safety and Health Act

1974

1975

- Dental Disease Prevention Activity transferred to CDC
- Lassa fever international symposium
- rise in incidence of Rocky Mountain Spotted Fever
- gonorrhea and other STDs—screening
- smallpox—last case Variola Major
- WHO Collaborating Center for Leptospirosis established at CDC
- CDC issues warning to travelers going to typhoid areas due to occurrence of disease in Americans who visited Haiti in 1974
- national gonorrhea control program in place; leads to reversal of spiraling trend in gonorrhea
- CDC spearheads Immunization Action Month campaign to immunize five million preschool children against measles, mumps, rubella, polio, diphtheria, tetanus, and whooping cough
- *CDC assists in visa and entry screening of Vietnamese refugees to United States, providing immunizations and medical clearance examinations in some cases; assists state health departments with follow-up preventive or curative care for those requiring it
- NIOSH develops scavenging systems for reducing waste anesthetic gas exposures in hospital and dental operating rooms; reports that cadmium smelter workers may be at excess risk of developing prostatic cancer

1976

- total budget: $150,371,000 (plus $34,532,000 for transition due to change in federal government fiscal year ending from June 30 to September 30)
- total personnel: 4,104
- *in February, CDC identifies two unknown virus isolates from New Jersey as being closely related to swine influenza virus
- *'Legionnaires' disease first recognized in July, when explosive outbreak of pneumonia occurs in persons who had attended an American Legion convention in Philadelphia
- SENIC phase I completed (nosocomial infections)
- occupational health criteria documents, health hazard evaluations, and safety programs in high gear
- measles cases increase by more than 50 percent
- researchers report isolation of agent causing human louse-borne typhus, from flying squirrels captured in Florida and Virginia
- *CDC researchers identify antigen of viral hemorrhagic fever in rodent tissues
- *CDC leads public health and scientific teams to Zaire and Sudan, where two large outbreaks of lethal hemorrhagic fever are occurring; new disease found to be caused by Ebola virus
- laboratory additions at CDC
- CDC establishes ongoing national surveillance for Reye syndrome
- CDC headquarters installs computer that provides, for first time, basic hardware capabilities to make CPU resources directly accessible by CDC professionals
- NIOSH occupies Robert A. Taft Center in Cincinnati, Ohio
- under CDC's revised vessel sanitation inspection program, number of cruise vessels meeting sanitation requirements rises from zero in first months of program to more than 50 percent

Refugee Health Care

Refugees have come to the United States in large numbers since the end of World War II. Many of these have received their required health examinations under criteria set by CDC.

Since 1975, more than one million refugees have entered the U.S., primarily from the Southeast Asian countries of Vietnam, Laos, and Cambodia. With the Refugee Act of 1980, HHS delegated to CDC its specific responsibility for refugee health care. Responsibilities include: overseas monitoring of medical examinations; visual inspection of refugees at points of arrival in the United States; notification of state and local officials of resettlement destinations; and resettlement health assessments soon after arrival and follow-up on refugee health needs.

Nearly all components of CDC have been impacted in some way by this responsibility—either by providing expert consultation on disease problems or by providing personnel for temporary duty assignments to refugee processing sites in this country or abroad.

Viral Hemorrhagic Fever

Viral hemorrhagic fever, caused by the Hantaan virus, is carried and transmitted to humans by many different rodent species. The disease is widespread in Asia, Europe, and possibly South America and Africa. The United States first became involved with the disease when several thousand American troops were affected during the Korean War.

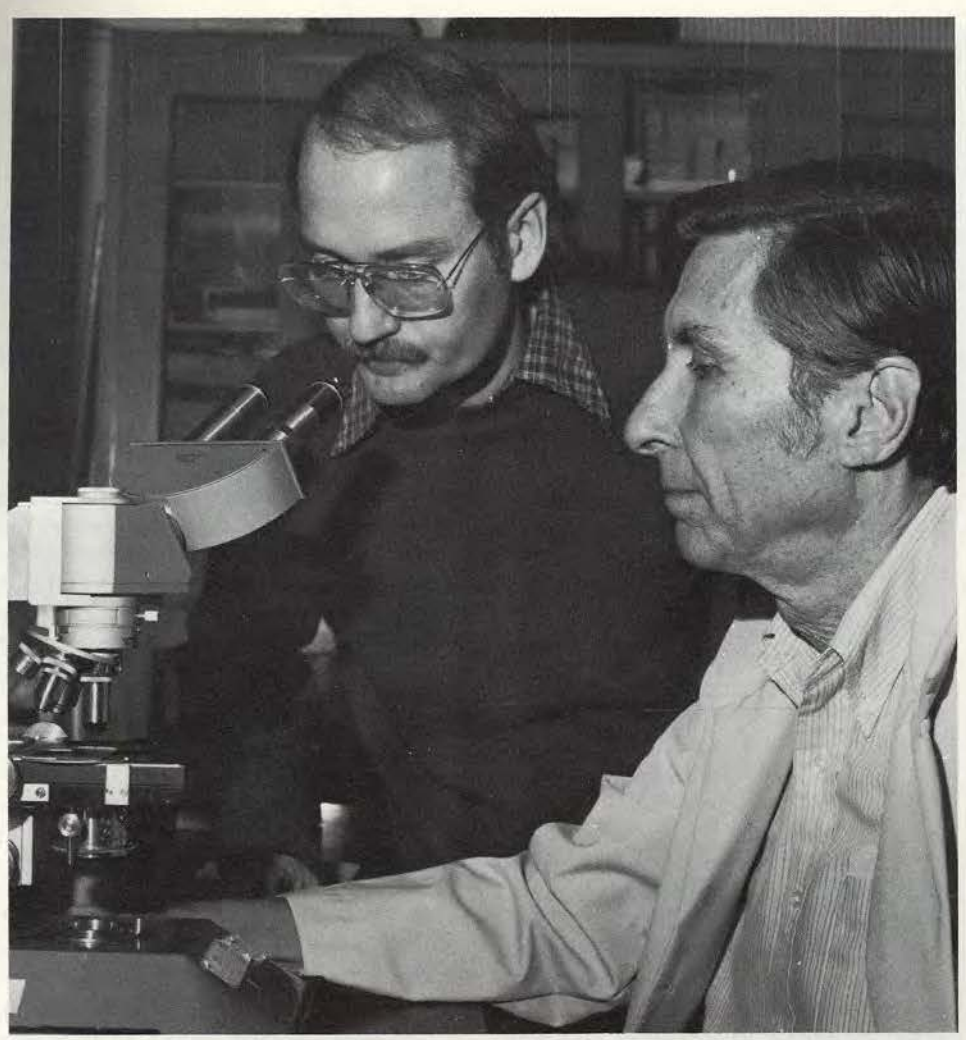
In 1976, CDC researchers identified the disease's antigen in rodent tissues. Continued CDC research finally identified the etiologic agent as a bunyavirus and developed a tissue culture system which allowed cultivation of the virus. This led to the isolation of hundreds of virus strains from throughout the world.

CDC research on this disease has had a major impact on the identification and characterization of the virus, improved diagnosis for clinical and epidemiological purposes, and identification of the disease in previously unsuspected geographic areas.

A young southeast Asian receives combined vaccine to protect her against both red measles and German measles. Vaccination programs are major parts of CDC assistance in the resettlement of refugees.

1975

- **Marburg fever—first case since 1967**



Dr. Charles C. Shepard (1914-1985), internationally recognized expert on rickettsial diseases and leprosy, and Dr. Joseph E. McDade, Chief, CID Viral and Rickettsial Zoonoses Branch, discovered Legionella pneumophila, the bacterium which causes Legionnaires' disease.

Swine Flu

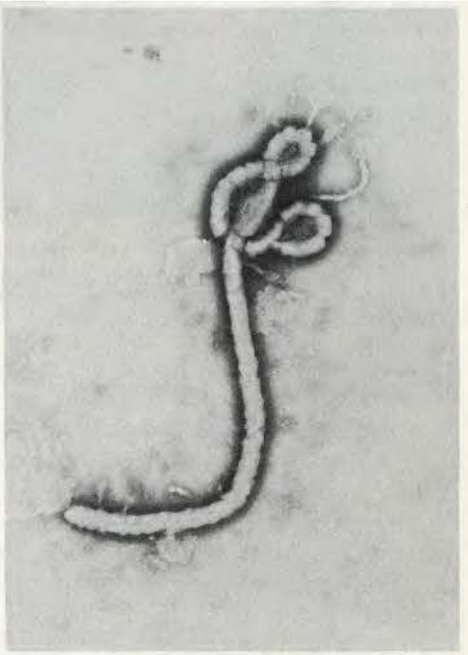
In February 1976, scientists identified two unknown virus isolates from New Jersey as being closely related to swine influenza virus. Researchers feared that such viruses would be seeded in the human population and erupt in a major epidemic the following winter. CDC recommended that a national program be instituted to manufacture, distribute and administer swine influenza vaccine to as many U.S. citizens as possible before the 1976-77 influenza season.

Approximately 50 million people were vaccinated before the program was stopped after reports were received in early winter of cases of Guillain-Barre Syndrome being associated with the vaccinations. This association led to a moratorium on the use of the vaccine and the establishment of a mechanism for compensating persons with severe adverse reactions to the vaccine.

Ebola-Marburg Virus

In 1976, CDC led public health and scientific teams to Zaire and Sudan, where two large outbreaks of a lethal hemorrhagic fever were occurring. The CDC researchers subsequently isolated and named the new Ebola virus. The new virus was identical in shape and appearance to the previously isolated Marburg virus, but was serologically unrelated.

In 1980, CDC researchers isolated Marburg virus from a patient in Kenya, thus extending the known geographic distribution of this disease. Laboratory studies at CDC have characterized the viruses as unrelated to existing viruses. CDC has played a pivotal role in identifying these highly fatal viruses, characterizing the viruses, conducting field studies to identify their distribution, and planning strategies to contain the disease outbreaks which they cause.



Viruses like the Ebola represent newly-identified organisms which cause diseases that may travel from one continent to another with an increasingly mobile world population.

Legionnaires' Disease

Legionnaires' disease was first recognized in July, 1976, when an explosive outbreak of pneumonia occurred mostly in persons who had attended an American Legion convention in Philadelphia. Since the 1977 isolation of the causative organism, *Legionella pneumophila*, more than 20 species in the *Legionella* genus have been identified.

Although first recognized in 1976, Legionnaires' disease is not a new illness. Previous outbreaks of unexplained respiratory disease have now been attributed to the same organism. A milder form of the disease, Pontiac fever, is caused by the same bacterium. *Legionella* species are now recognized as a common cause of sporadic and epidemic cases of pneumonia, both in hospitals and in the community.

1976

- **emergence of a new strain of gonorrhea (PPNG) which produces an enzyme called penicillinase that destroys penicillin—the drug of choice against gonorrhea for 30 years**

1977

- new director: Dr. William H. Foege
- NIOSH—reorganized; assumes new mine safety and health responsibilities
- *Legionella pneumophila*, causative agent of Legionnaires' Disease, isolated at CDC
- Diabetes Control Activity established
- last case endemic smallpox (variola minor) case occurs in Somalia
- *Type A(H1N1) influenza virus reappears after an absence of 20 years
- *outbreak of raccoon rabies in mid-Atlantic states
- CDC begins in-depth study on Lassa fever; eventually shows disease more common in West Africa than previously believed, with 100,000 annual infections occurring
- NIOSH establishes Educational Resource Centers to ensure adequate supply of interdisciplinary trained professionals in field of occupational safety and health
- *National Immunization Initiative launched on April 7, to immunize children against poliomyelitis, measles, rubella, pertussis, tetanus, diptheria, and mumps
- CDC initiates nutritional status surveillance system

A shot felt 'round the Nation—the U.S. launched a major campaign against childhood diseases in 1977 which was to reduce incidence of vaccine preventable diseases to historic low levels.

Immunization Initiative

CDC was given lead responsibility for planning and directed activities under the National Immunization Initiative. Launched in 1977, the campaign goal was to raise immunization levels of American children to at least 90 percent by October 1979.

The initiative included development of a continuing mechanism to provide comprehensive immunization services to most babies born in the United States each year.

Influenza

CDC's Influenza Branch is one of the two World Health Organization (WHO) Collaborating Centers for influenza in the world. It is responsible for characterizing all influenza strains, a process that provides the basis for the annual updating of inactivated vaccines.

In 1977, type A(H1N1) influenza virus reappeared after an absence of 20 years. New options have appeared for control of influenza with antiviral drugs and live vaccines. CDC's activities in these areas include sequencing candidate live vaccines, developing monoclonal antibody techniques for rapid diagnosis of influenza infection, testing methods to interrupt influenza outbreaks, and dissemination of information about outbreaks through an electronic bulletin board.

Rabies

In the United States, an ongoing outbreak of raccoon rabies in the mid-Atlantic states began in 1977 and continued into the mid-1980's. In 1981, CDC developed a panel of monoclonal antibodies directed against rabies viruses which had been isolated from different animal species. This has provided a tool for better defining rabies epidemiology.

CDC also played a major role in licensing the human diploid cell rabies vaccine (HDCV), used for both preexposure and postexposure in the United States. International collaboration between CDC and European rabies diagnostic laboratories has intensified due to changes in rabies epidemiology in Europe. The first known case of human rabies of bat origin in Europe occurred on Oct. 5, 1985 in Finland.

If the tiger is in the garden
Need the cobra fear the mongoose?

Mohan Singh,
The New England Journal of Medicine,
Vol. 296, No. 26, June 30, 1977, p. 154

CDC is a designated WHO Collaborating Laboratory for influenza. Bert Fiedler, Lab Technician and Dr. Alan Kendal at work in influenza lab in 1977.

1977

- **passage of Mine Safety and Health Amendments Act**
- **WHO launches global expanded program on immunization with target of immunization for world's children by 1990**

1978

- plans made for certification of eradication of smallpox
- SENIC—phase II completed
- maximum containment laboratory ("hot lab") opens to handle viruses that are too dangerous to be handled in ordinary laboratory; scientists work with highly virulent organisms (e.g. Lassa, Marburg, and Ebola viruses) in order to find better ways to diagnose infection and to control diseases they produce
- hepatitis—A & B primate studies conducted
- first international conference on Legionnaires's disease held to share information about this newly-recognized disease with international medical and scientific community
- improved technology for lead poisoning screening; hematofluorometer used as primary screening tool for detecting lead poisoning and iron deficiency anemia
- *cholera—first outbreak in U.S. since 1911; CDC study with Louisiana health officials reveal hidden focus of cholera persisting along Gulf coast; consultation with state and industry officials lead to further studies of cholera and its control
- *first drug-resistant tuberculosis outbreak
- NIOSH publishes 100th criteria document—identifies cohort of petrochemical workers in Texas at excess risk of brain cancer
- measles cases drop 61 percent in first three quarters of fiscal year
- since March 1976, 446 cases of PPNG reported to CDC
- CDC spearheads national program to eliminate indigenous measles from United States by October 1982
- cooperative five-year project begins with India to evaluate seroepidemiologic tests for malaria; CDC provides training in performing tests and field evaluation of test results

First Drug-Resistant Tuberculosis Outbreak

In 1978, CDC reported the first known community outbreak of drug-resistant tuberculosis. The outbreak occurred in Alcorn County, Mississippi. By the end of 1980, the county had reported a total of 24 cases. Causative organisms were resistant to the three most commonly used drugs—isoniazid, streptomycin, and PAS.

Twenty-two of the cases responded to alternate therapy; death from tuberculosis occurred in two cases. Two of the infected persons were residents of other states, although no secondary spread of infection was reported in those states.

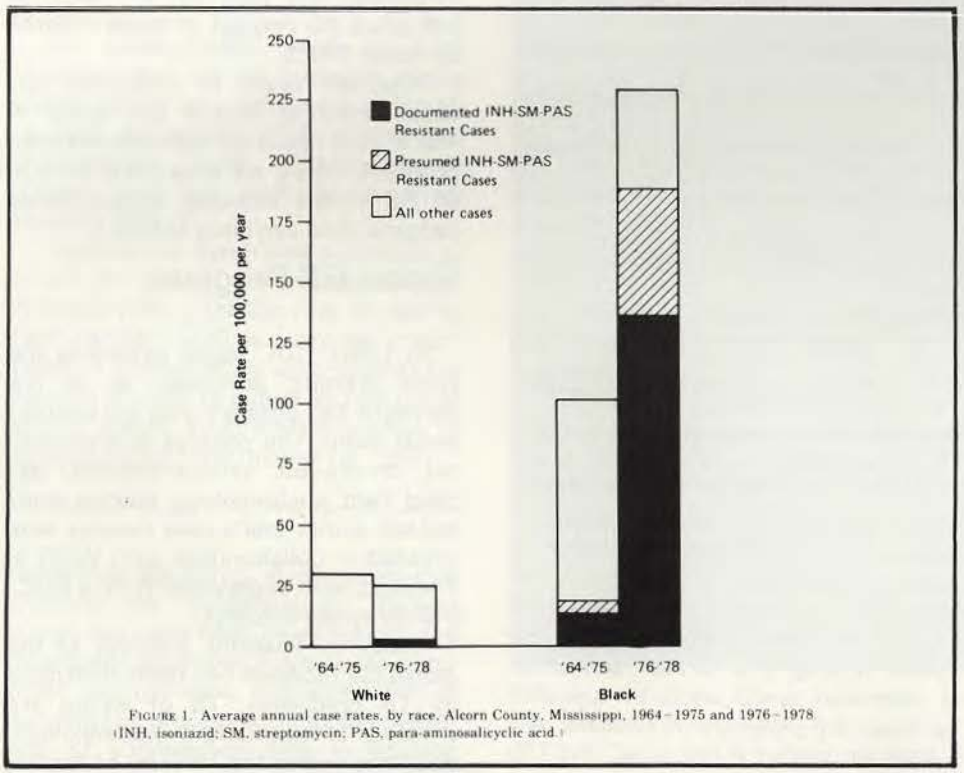


FIGURE 1. Average annual case rates, by race, Alcorn County, Mississippi, 1964–1975 and 1976–1978 (INH, isoniazid; SM, streptomycin; PAS, para-aminosalicyclic acid.)

A national campaign to eliminate measles has reduced indigenous cases and has pinpointed new high risk groups for the illness. Pre-school aged children and young adults are pockets of susceptibility.

Cholera

In 1978, studies by CDC and the Louisiana Department of Health and Human Resources revealed that a hidden focus of cholera was persisting along the Gulf Coast. Previously, humans were thought to be the only reservoir for cholera. Investigations since 1978 have strongly suggested that the organism which causes the disease persists by living in the brackish water of coastal swamps.

One outbreak of cholera and several sporadic cases have been detected since 1978. Worldwide investigations of cholera by CDC have shown that food is a very important vehicle of transmission for this disease, which was once thought to be almost exclusively waterborne. Also, CDC has shown that cholera can spread within households by contamination of food by ill foodhandlers.

1978

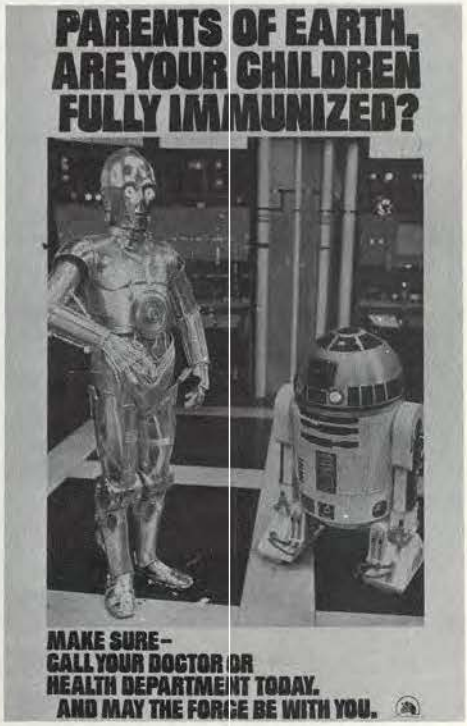
- **In November, University of Colorado researcher describes toxic-shock syndrome in children, a previously unrecognized illness characterized by high fever, shock, and rash**

1979

- *Healthy People: the Surgeon General's Report on Disease Prevention and Health Promotion* published
- CDC Lassa fever WHO Collaborating Center established, Sierra Leone
- CDC investigates health status relating to Three-Mile Island nuclear incident
- CDC studies prevalence and incidence of hepatitis B in homosexual men; begins trial studies of hepatitis B vaccine
- to date, federally-assisted urban rat control programs have freed six million people from rat-infested environments
- *school immunizations reach 91 percent
- NIOSH publishes criteria document on working in confined spaces; finds that workers exposed to beryllium are at excess risk of cardiovascular disease and lung cancer
- Legionnaires' Disease—training course and management
- surveillance shows no toxigenic strains of cholera in United States
- childhood lead poisoning prevention: programs in 64 communities screen 450,000 children, the largest number tested in last five years
- U.S.-Mexican border outbreak of rabies; four human rabies deaths in United States and three in Mexico; intense rabies control program carried out with Mexican health authorities
- CDC assigned lead responsibility for environmental emergency response
- outbreak of paralytic polio occurs among Amish; biochemical test performed by CDC scientists pinpoints wild paralytic polio virus strain; first time such specific differentiation between wild poliovirus is possible
- emphasis continues on developing and implementing control programs to reduce incidence of sexually transmitted diseases by focusing on disease intervention activities
- tuberculosis continues as major public health problem in United States, as evidenced by 28,521 cases reported for year
- CDC establishes fluoridation project grant program designed to provide financial and technical assistance to states and communities
- two surveillance systems established to study sterilization in United States: one describes number and characteristics of reproductive-age women obtaining tubal sterilization and hysterectomy; other monitors complications occurring from sterilizing operations in selected hospitals

1980

- CDC reorganized and renamed Centers for Disease Control
- *CDC coordinates follow-up of health effects of abandoned toxic waste site, Love Canal, in Niagara Falls, N.Y.
- *CDC assists in evaluation and begins follow-up studies of health effects of Mt. St. Helen's volcanic eruption
- *toxic-shock syndrome task force formally organized; conducts first case control study; publishes findings in MMWR
- all-time low of 13,506 measles cases reported—greater than 97 percent reduction from annual average of 500,000 cases in pre-vaccine era
- *Promoting Health/Preventing Disease: Objectives for the Nation* published
- smallpox eradication bureau disbanded
- CDC assumes primary responsibility for health care of refugees resettled in United States; provides epidemiologic assistance to Kampuchean refugees in Thailand and to Somali Refugee Health Unit (Africa)
- *Global EIS program gets underway with first training program in Thailand
- *study shows that *Campylobacter* is most common cause of diarrheal illness leading to hospitalization in United States
- CDC researchers isolate Marburg virus from patient in Kenya, thus extending known geographic distribution of this disease
- NIOSH initiates Project SHAPE (Safety and Health Awareness for Preventive Engineering) to encourage improvements in engineering practice, education, and research
- CDC provides funds to 20 states to establish community-based programs to help reduce morbidity and mortality associated with diabetes
- case-control studies of Reye syndrome begun in Arizona, Michigan, Ohio
- Joseph W. Mountin Lecture established



Immunization Update

As of October 1979, 91 percent of America's 34 million children in kindergarten through eighth grade were immunized against measles, polio, diphtheria, tetanus and pertussis. This surpasses the goal set in 1977 to immunize 90 percent of these children by fall of 1979.

Reported cases of childhood diseases were at record low levels in 1979 as a result of the immunization program. There are now state laws in all 50 states requiring immunization before a child can enter school.

Global EIS Program

In 1980, CDC began extending the same training principles as in the domestic EIS program into the international realm. The concept of preceptorial, on-the-job, service-oriented, applied field epidemiology training conducted within one's own country was initiated in collaboration with WHO in Thailand, with supervision from a CDC-trained epidemiologist.

Today in Thailand, success of the global EIS program has been evidenced by 16 graduates, 15 of whom are working in permanent epidemiologic positions within the Ministry of Health,

1979 • **Global Commission certifies eradication of smallpox** • **at least two different non-A, non B-hepatitis viruses identified** • **Three-mile Island nuclear reactor accident**

Mt. St. Helens

On May 18, 1980, Mt. St. Helens, a long-dormant volcano in Washington, erupted. The Center for Environmental Health and the National Institute for Occupational Safety and Health were immediately requested by the state to assist in an epidemiologic evaluation.

CDC prepared 23 Mt. St. Helens Health Reports to public health workers between May 1980, and February 1981. Long-term follow-up studies on high-risk groups were completed in 1985. CDC funded and assisted in a series of studies on the health effects of dust exposure, occupational exposure, and mental health effect of the volcanic eruption. The results were published in a special supplement of the American Journal of Public Health in March 1986.

Mt. St. Helen's erupts in the spring of 1980, devastating the surrounding lake area and scattering volcanic ash, dust and debris for miles around. CDC staff assisted in health evaluation, disaster management, and occupational safety programs related to the eruption.

Toxic-Shock Syndrome

In November 1978, researchers at the University of Colorado described toxic-shock syndrome, a previously unrecognized illness characterized by high fever, shock, and rash. In May 1980, CDC reported an unusually high occurrence of TSS among menstruating women.

An epidemiologic study by CDC identified the use of tampons during menstruation as a risk factor associated with the disease. CDC studies also documented that *Staphylococcus aureus* was the probable organism causing TSS.

Toxic-shock syndrome continues to occur in young, previously healthy women, with a fatality rate of two to four percent. CDC is currently undertaking a project at six sites around the country in order to detect all TSS cases and to define what characteristics of tampons determine the risk for TSS.

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numerous epidemics investigated that without the epidemiology trainees would not have been investigated, and significant advances made in development, maintenance, and application of surveillance programs, including utilization of surveillance data to develop control and prevention measures.

Campylobacteriosis

A group of disease-causing bacteria known as *Campylobacter* first emerged as a public health threat in 1977. A 1980 CDC study showed that *Campylobacter* was the most common cause of diarrheal illness leading to hospitalization in the United States.

National surveillance for *Campylobacter* begun in 1981 shows that very young infants and young adults between the ages of 15 and 30 are the most likely to be affected. CDC investigators revealed that raw milk is one important source in outbreaks. There are now eight species of *Campylobacter* that are likely to cause illness in humans.

CDC has played a major role in defining new *Campylobacters* and in developing standard procedures to identify them in the laboratory.

Love Canal

In the late 1970s, the contents of an abandoned chemical waste dump in Niagara Falls, New York, began to contaminate surrounding inhabited areas. In 1980, CDC joined in the program of research and services provided by federal and state environmental protection and health agencies.

CDC was assigned lead responsibility in the Department of Health and Human Services for directing and coordinating health studies of Love Canal residents. Specifically, CDC scientists took part in designing, implementing, and analyzing a study of chromosome damage among residents. CDC also worked on studies of reproductive outcome and will do a long-term health followup of Love Canal residents. It also assisted in managing the clean-up of Love Canal and is helping to establish criteria for rehabitation of the area.

Heavy equipment and teams of people, suited and masked for work in a toxic environment, take an early step to prepare the Love Canal area for rehabitation. CDC did health assessments and study of reproductive outcomes.

1980

- **Congress passes Comprehensive Environmental Response, Compensation, and Liability Act, commonly known as Superfund**
- **WHO Assembly declares smallpox eradication achieved worldwide**
- **nearly 116 million U.S. residents receive benefits of fluoridated water**

1981

- *AIDS epidemic first recognized when CDC receives reports in spring from Los Angeles physicians of five previously healthy homosexual men diagnosed with *Pneumocystis carinii* pneumonia; cases of Kaposi's sarcoma also detected among previously healthy homosexual men; in June, CDC organizes investigating AIDS task force composed of personnel from various centers
- HHS implementation of Superfund Act assigned to CDC
- Preventive Health Block Grant administered by CDC
- *CDC begins participation in CCCD project in Africa to reduce preventable mortality and morbidity in children
- *CDC assists in investigation of outbreak of severe respiratory illness linked to contaminated olive oil in areas in and around Madrid, Spain; over 13,000 people affected; over 100 deaths occur
- CDC develops panel of monoclonal antibodies directed against rabies viruses; provides tool for better defining rabies epidemiology
- *case totals of Rocky Mountain spotted fever peak in United States
- *CDC conducts multicenter vaccine trial which demonstrates efficacy of newly-developed hepatitis B vaccine in preventing hepatitis B infection
- CDC begins extensive case-control birth defects study in Atlanta area
- *NIOSH assists in redesigning jackhammer to reduce vibration; develops recommendations and work practices to reduce and/or eliminate precursor agents to nitrosamines in workplace
- Aerodynamic Particle Sizer instrument developed by NIOSH to measure particle size with laser velocimetry recognized for outstanding technological achievement
- CDC begins several initiatives to improve estimates of incidence of child abuse, homicide and other forms of violence
- three new states become part of National Nutritional Status Surveillance System, bringing total to 25
- *CDC begins Behavioral Risk Factor Surveillance System (BRFSS); assists states in conducting telephone surveys to determine prevalence of major behavioral risks in adult populations

CCCD Effort in Africa

CDC has played a key role in the Combatting Childhood Communicable Disease in Africa (CCCD) project since it was launched by the U.S Agency for International Development in 1981.

Working in conjunction with the WHO Regional Office and the U.S. Peace Corps, CDC provides the majority of technical expertise and support. It conducts feasibility studies to determine the need for CCCD involvement in a country and provides assistance in implementing CCCD objectives.

Two delegates and an observer to the CCCD-Africa overview held at CDC in December 1985 discuss immunization and diarrheal diseases programs in Zaire. Project is a major international health initiative involving staffers from CDC.

Presently, 20 to 30 percent of children born in tropical Africa die before their fifth birthday. The main objective of CCCD is to reduce morbidity and mortality of African children by strengthening national capability to immunize infants and women of childbearing age, treat diarrhea and dehydration with oral rehydration therapy, treat fever in children (presumptively as malaria,) and provide malaria chemoprophylaxis to pregnant women.

CCCD activities are currently underway in 12 African countries: Zaire, Togo, Liberia, Congo, C.A.R., Lesotho, Swaziland, Malawi, Rwanda, Guinea, Ivory Coast, and Burundi. Countries identified as potential CCCD bilaterals in the near future include: Nigeria, Burkina Faso, Zambia, Sudan, and Madagascar.

In terms of budget and scope, CCCD is the largest health program that the U.S. Government has ever undertaken overseas.

Hepatitis

Prevention and control of hepatitis B infection continues to be a major priority of CDC. Over the past decade, studies carried out by CDC epidemiologists defined groups at high risk for hepatitis as health care workers, homosexual men, illicit drug abusers, and persons with multiple heterosexual contacts.

In 1981, a multicenter vaccine trial conducted by CDC demonstrated the efficacy of a newly-developed hepatitis B vaccine. The trial supported the licensure of this vaccine in 1982. The delta virus is a newly-described agent that causes hepatitis and often leads to chronic severe liver disease. CDC epidemiologists have characterized particularly severe outbreaks of this disease in illicit drug users in the United States and among Indian populations in South America.

BRFSS

Behavioral risk factors account for significant portions of all premature death in the United States. As states began to address such major health risks as smoking, overweight, drinking and driving, lack of seatbelt use, and lack of exercise, CDC in 1981 launched the Behavioral Risk Factor Surveillance System. This major surveillance system assists states in acquiring state-specific baseline data on behavioral risk factors.

Toxic Olive Oil

Toxic olive oil, sold in provinces near Madrid, Spain, caused illness and death among Spanish people for months in 1981. CDC assisted the Spanish Ministry of Health with an epidemiologic study of the outbreak of illness, first manifested as pneumonia-like symptoms and then in sequellae indicative of neurological disease. The original epidemiologic link between use of the olive oil and illness was strong but not definitive. The oil was analyzed in several labs in the United States and abroad. Spanish authorities seized the suspect oil and replaced it with pure oil. New cases of illness appeared to stop in September of 1981, but persons who reported with the initial pneumonia-like symptoms began returning for treatment of neurological symptoms approximately three months later.

AIDS

The AIDS epidemic was first recognized in the spring of 1981, when CDC received reports from Los Angeles physicians of five previously healthy homosexual men diagnosed with *Pneumocystis carinii* pneumonia. Within several weeks, 26 cases of Kaposi's sarcoma, an unusual cancer, were reported in homosexual men in New York and California. First cases of AIDS among hemophilia patients and transfusion recipients were reported in 1982 and among IV drug users in 1981.

In June 1981, CDC organized an investigating task force composed of personnel from its various centers. This task force has evolved into the AIDS Program, a division within the Center for Infectious Diseases. Today, CDC conducts AIDS surveillance, epidemiologic studies, basic laboratory research, and supports health education and prevention programs.

As of June 1986, more than 21,000 cases of AIDS had been reported to CDC, more than half of whom have died. Persons at risk for AIDS include gay or bisexual men, intravenous drug users, blood transfusion recipients, hemophiliacs, and heterosexual partners of persons with AIDS or risk group members.

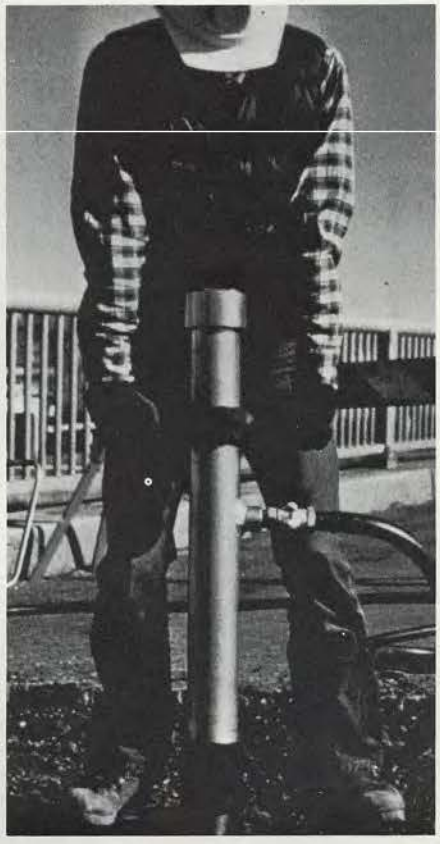
Rickettsial Disease

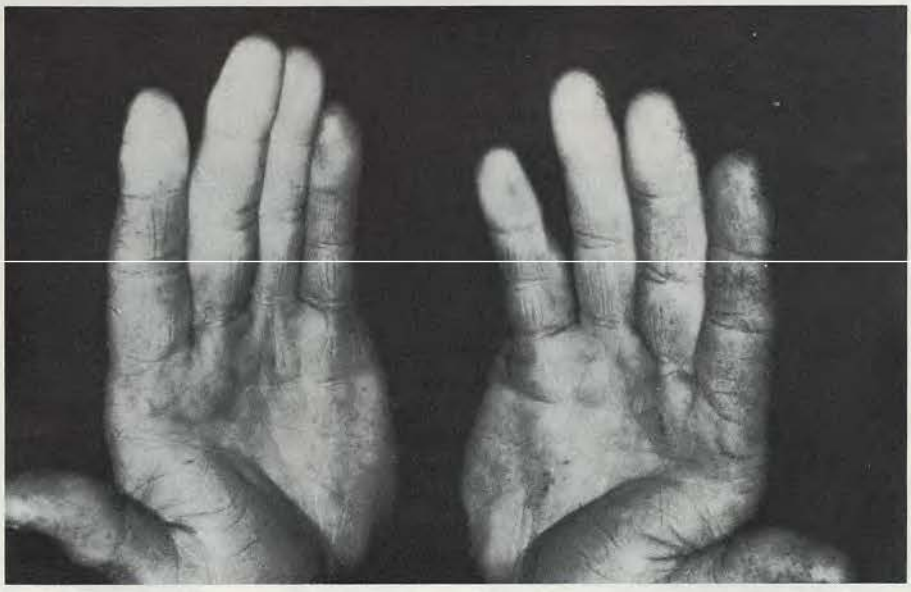
Rocky Mountain spotted fever (RMSF) accounts for more than 90 percent of the reported cases of rickettsial disease in the United States. CDC's national surveillance revealed a marked increase in the number of cases of the tick-borne disease throughout the 1970s and 1980s, with the case total peaking in 1981.

From 1970-1982, the highest incidence rates were reported from the South Atlantic states, particularly North Carolina, South Carolina, and Georgia. RMSF began to shift toward the west in 1983, and Oklahoma has reported the highest incidence rate since that time. In response to this outbreak, CDC has become involved in studies of the epidemiology, clinical manifestations, and laboratory diagnosis of RMSF. Newer, more sensitive laboratory tests were recommended in 1980 for the earlier diagnosis of RMSF.

Jackhammer Redesign

NIOSH has developed hand tool measurements of vibration leading to the first redesign of the jackhammer in 50 years. The new design eliminates vibration to the handle, thus preventing "white finger" syndrome and substantially reducing the noise emitted from jackhammer operations.





Workmen using jackhammers to drill through surfaces of growing urban centers were often the victim of "white finger" disease, a disabling occupational condition. NIOSH redesigned the jackhammer to reduce its hazard to the nation's workforce.

1982

- cooperative agreement with Association of Schools of Public Health supports wide variety of projects to assist state and local health departments by providing scientific support from faculty and students and to assist schools by creating opportunities for faculty and students to apply expertise in community settings
- syphilis and gonorrhea decline in incidence
- Global EIS program initiated in Indonesia
- NIOSH initiates Project Minerva to incorporate safety and health management concepts into the nation's business school curricula
- development of Table V for MMWR: lists primary causes of premature mortality, numbers and rates of death attributed to each cause, and years of potential life lost for each cause
- CDC begins international campaign to gather worldwide support for elimination of dracunculiasis (guinea worm disease)
- *CDC begins focus on alcohol epidemiology
- *CDC investigators discover cause of two outbreaks of hemorrhagic colitis is *E. Coli* (0157:H7), rarely-recognized serotype of *E. coli* that had only once before been linked to human illness
- Fatal Accident Circumstances and Epidemiology (FACE) program initiated by NIOSH
- first AIDS case in hemophiliac reported; CDC publishes recommendations for clinical and laboratory staffs; first blood transfusion-associated AIDS patient identified

1983

- new director: Dr. James O. Mason
- *Agency for Toxic Substances and Disease Registry (ATSDR) established at CDC to carry out health-related responsibilities of Superfund
- *Agent Orange study responsibility transferred, by interagency agreement, from Veterans Administration to CDC
- Phoenix laboratories moved to Atlanta
- MMWR surveillance summaries initiated
- CDC installs new mainframe computer
- *annual Institute on Health Laboratory Practices established
- almost all children in need of immunization reached since National Childhood Immunization Initiative began in 1978
- Violence Epidemiology Branch established to apply epidemiologic techniques to study problems of child abuse, homicide, and child and adult suicide
- *CDC officially becomes involved with epidemiologic and public health aspects of exercise
- as famine problem begins to emerge in sub-sahelian Africa, CDC conducts nutrition assessment in Mauritania
- *NIOSH suggested list of Ten Leading Work-Related Disease and Injuries published in MMWR; in conjunction with OSHA, U.S. Coast Guard, and Environmental Protection Agency, publishes worker bulletin on hazardous waste sites and hazardous substance emergencies
- PHS recommends preventive measures for AIDS; establishes "AIDS hotline"; persons at increased risk of contacting AIDS advised to refrain from donating blood

Hemorrhagic Colitis

In 1982, CDC investigators discovered that the cause of two outbreaks of hemorrhagic colitis was *E. coli* 0157:H7, a rarely recognized serotype of *E. coli* that had only once before been linked to human illness. Since 1982, CDC has investigated two other outbreaks of this disease and has provided laboratory support for investigation of sporadic cases. In three of the outbreaks, illness was caused by eating contaminated ground beef and in one outbreak, *E. coli* 0157:H7 was isolated from the suspect beef.

A CDC laboratory developed a special medium for detecting this *E. coli* and published studies describing an animal model to investigate its pathogenicity. Today, *E. coli* 0157:H7 is no longer considered rare. Some investigators report isolating it from 15 percent of sporadic cases of bloody diarrhea.

Exercise Involvement

To create more effective health promotion programs in the United States, CDC became involved with the epidemiologic and public health aspects of exercise in 1983.

The Center for Health Promotion and Education (CHPE) identified exercise as a priority research topic because of its influence on the reduction of coronary heart disease, weight control and symptoms of depression.

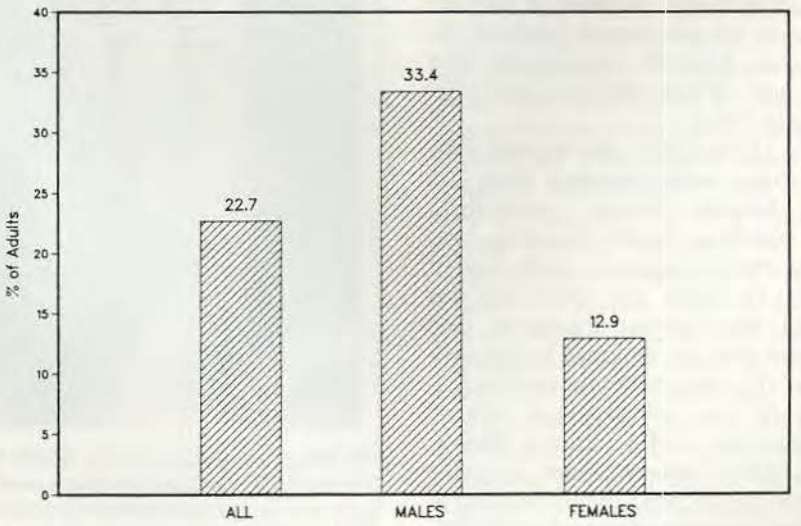
Alcohol Activity

In 1982, CDC established an organized focus for all alcohol-related activities following a "Memorandum of Understanding" between CDC and the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA), and an interagency agreement between CDC and the National Institute for Alcohol Abuse and Alcoholism (NIAAA).

CDC currently is funding two alcohol projects: a cooperative agreement with the Rhode Island Department of Health, and a standing agreement with the Association for Schools of Public Health.

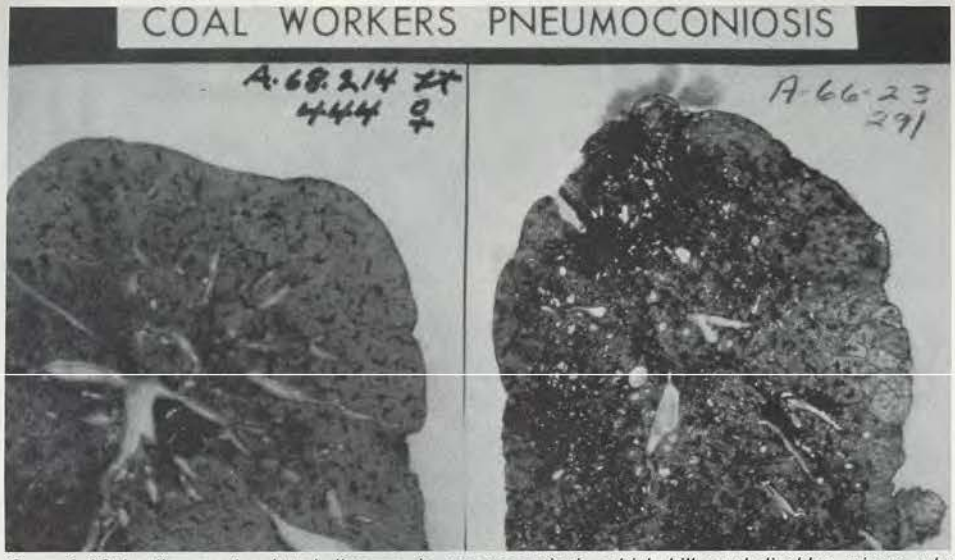
In 1986, alcohol activities became a part of injury control epidemiology in CEH.

Acute Heavy Alcohol Use
5 or more drinks on one occasion in the past month
Data from the Behavioral Risk Factor Prevalence Survey, U.S., 1981–83



1982

- **hepatitis B vaccine licensed in United States**



One of 10 leading work-related diseases is pneumoconiosis which kills and disables miners who breathe dust and other foreign matter during a lifetime of work below ground.

10 Leading Work-Related Diseases and Injuries

Ten leading causes of disease and injury related to the workplace were identified by NIOSH and published in the MMWR Jan. 21, 1983. Included on the list were occupational lung diseases, musculoskeletal injuries, occupational cancers, severe occupational traumatic injuries, occupational cardiovascular diseases, disorders of reproduction, neurotoxic disorders, noise-induced loss of hearing, dermatologic conditions, and psychologic disorders.

Three criteria were used to develop the NIOSH list: the frequency of occurrence of disease or injury; severity of the condition in the case of the individual stricken; and its amenability to prevention. The list was prepared to encourage deliberation and debate among professionals about major problems in occupational public health; to assist in setting national priorities for efforts to prevent health problems related to work; and to make public the priorities of NIOSH leadership and the focus of the Institute's activities.

A national symposium to discuss strategies for preventing the first five conditions on the list was held May 1-3, 1985 in Atlanta. A second symposium, to discuss the final five, will be held in Cincinnati Oct. 28-31, 1986.

The Association of Schools of Public Health and the Association of University Programs in Occupational Health and Safety have cooperated in sponsorship of the symposia.

Annual Institute on Health Laboratory Practices

In 1983, CDC established a series of annual conferences entitled "Institute on Critical Issues in Health Laboratory Practice." These institutes have provided opportunities for health laboratory professionals and laboratory client groups to work collaboratively to promote quality laboratory testing procedures.

The first institute addressed the emerging public health issues associated with environmental health laboratory practice. This Institute and concurrent work of the CDC Task Force on Environmental Health provided impetus for two important achievements: development of the "Resource Guide: State Environmental Health Laboratory Services" (see 1985); and establishment of a Graduate Laboratory Managers Program in Environmental Health which CDC assisted in developing through a cooperative agreement with the University of Alabama at Birmingham.

The 1984 institute treated the subject of the impact of alternative reimbursement methods on laboratory practice. Institute proceedings, published in a monograph which has been widely distributed and quoted, describe the nature of the issues and proposed strategies for future cost containment action by the laboratory community.

"Worker Safety in the Health Laboratory" was the topic of the 1985 Institute. The published monograph is being used as a companion to the 1984 CDC-NIH manual "Biosafety in Microbiological and Biomedical Laboratories," to provide comprehensive coverage of this important laboratory issue.

A fourth institute, planned for fall 1986, will address the topic "Managing the Quality of Laboratory Test Results in a Changing Health-Care Environment."

Worker wears personal respirator to protect against occupational lung disease, first among leading work-related diseases and injuries. Delegates to a symposium scheduled for October 1986 will discuss prevention strategies for five other work-related illnesses or injuries.

1983

- **AIDS virus identified**

ATSDR

The Agency for Toxic Substances and Disease Registry (ATSDR) was established in 1983 and formally organized in 1985 to carry out the health-related responsibilities of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), known as Superfund. It fulfills much of this mandate through interagency agreements with other Public Health Service (PHS) agencies and through cooperative agreements and contracts with states and other organizations. Primary activities are:

- To determine danger to the public health from release of a hazardous substance.
- To keep a registry of serious diseases and illnesses.
- Establish and maintain a comprehensive and publicly accessible inventory of literature, research, and studies on the health effects of toxic substances.
- In the case of public health emergencies caused by or believed to be caused by exposure to toxic substances, assist, consult, and coordinate with private or public health care providers in providing medical care and testing for exposed individuals.
- Conduct periodic surveys and screening programs to determine relationships between exposure to toxic substances and illness.

Teams of scientists examine toxic wastes in bulging drums or barrels. Wastes are slated for destruction and disposal before they leak hazardous materials into the nation's environment.

Two additional responsibilities mandated under the 1984 amendments to the Resource, Conservation, and Recovery Act (RCRA) are to conduct health assessments at RCRA sites and to assist EPA in determining which substances should be regulated under RCRA and the levels at which they pose a threat to human health.

By the end of 1984, CDC had published 47 reports and guidelines on Acquired Immunodeficiency Syndrome in its Morbidity and Mortality Weekly Report (MMWR), to inform health personnel and the American public of latest findings on prevention and control of the AIDS epidemic. Lawrence Odum (l) and Willie Anderson (r) at CDC's publications distribution warehouse in Atlanta are assembling MMWRs for distribution to locations throughout the country.

Agent Orange

Congress mandated that the Veterans Administration (VA) conduct an epidemiologic study of U.S. veterans to assess the possible health effects of exposure to herbicides, dioxin, and other environmental factors during the Vietnam conflict. The responsibility for the design, conduct, and analysis of studies responsive to these laws was transferred, by an interagency agreement, from the VA to CDC in mid-January 1983.

Responsibility for Vietnam studies is transferred from the VA to CDC in mid-January 1983.

1984

- new deputy director: Dr. Donald R. Hopkins
- CDC provides epidemiological assistance in Bhopal, India disaster
- Global EIS programs initiated in Mexico and Taiwan
- CDC completes study on risks for Vietnam veterans of fathering babies with birth defects; no evidence of greater risk for veteran offspring found
- *national surveillance of Reye syndrome shows declining incidence
- CDC designated PHS agency to administer state planning grants in disease prevention and health promotion
- purchase of approximately nine additional acres at CDC Clifton Road facility brings total to approximately 29.5 acres
- CDC provides technical expertise to first health initiative project "Closing the Gap" conducted by Carter Center of Emory University
- CDC upgrades mainframe computer: executes instructions at rate of 7.5 million per second; transfers data to and from data storage devices at three million characters per second; contains internal memory of 32 million characters
- to counter shortage of diphtheria, tetanus and pertussis (DTP) vaccine, ACIP recommends postponement of doses usually given at 18 months and 4 to 6 years of age until greater supplies become available
- rates for primary and secondary syphilis continue decline first shown in 1983; gonorrhea cases also continue to drop
- nutritional assessments conducted in Niger, Mauritania, and among Afghan refugees in Pakistan
- CDC participates in evaluation of several antigen detection systems for chlamydia
- CDC funds research to study epidemiology of human papilloma virus
- *antimicrobial-resistant salmonellosis outbreak reported
- NIOSH develops work practice and control recommendations to protect workers in new industry of commercial DNA processing operations
- as of Aug. 20th, 5,699 AIDS cases and 2,586 AIDS deaths reported to CDC

Salmonellosis

Over the past decade, the reported incidence of salmonellosis has steadily increased. CDC estimates that there are about four million *Salmonella* infections and 1000 deaths from these infections in the United States each year.

Accumulated evidence indicates that most cases of salmonellosis are caused by eating contaminated foods from animal sources. CDC researchers have found that a large proportion of the type of *Salmonella* which causes disease in humans is resistant to one or more antimicrobial agents. Recent CDC investigations have traced resistant *Salmonella* from humans back to animal sources, suggesting that antimicrobial use in animals may be an important factor contributing to antimicrobial resistance in these *Salmonella* strains.

Reye Syndrome

Reye syndrome was first described in 1963 by R.D.K. Reye in Australia, and by George Johnson, a North Carolina state EIS officer. In 1973, CDC documented the first nationwide outbreak of 374 cases of Reye syndrome associated with influenza B activity.

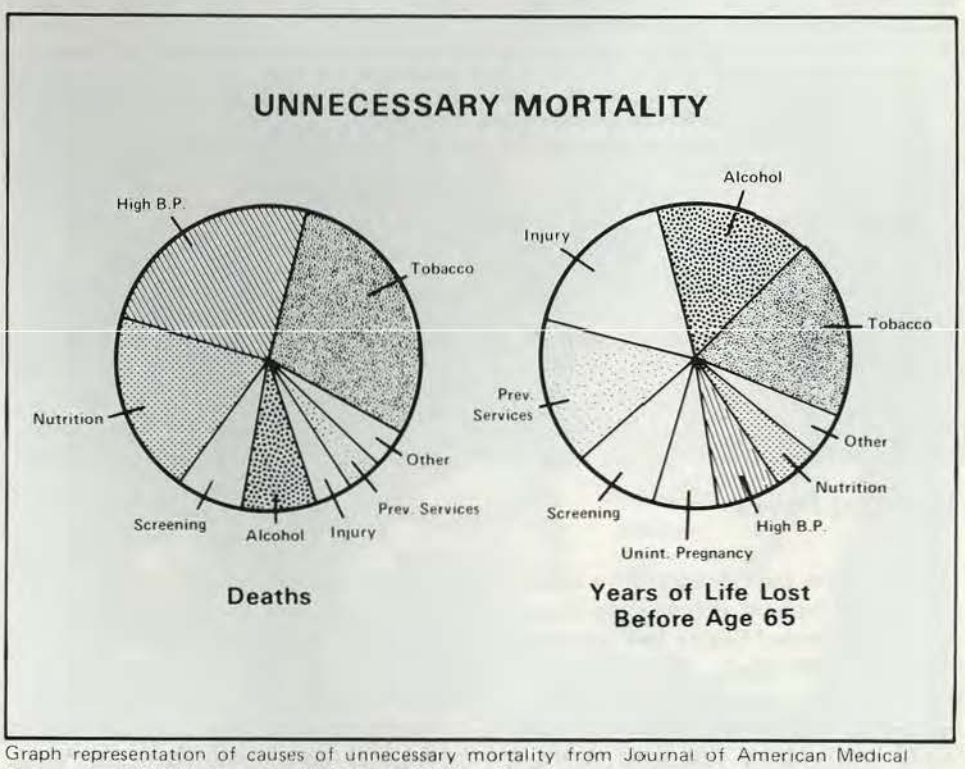
CDC established ongoing Reye syndrome national surveillance in 1976; initially 300-500 cases were reported annually. From 1980-1982, four case-control studies were conducted in Arizona, Michigan, and Ohio which reported an association between Reye syndrome and salicylates. CDC published these results in the MMWR, with an advisory warning parents and physicians to avoid using salicylates for the treatment of chickenpox and influenza-like illness.

From 1980-1984, national surveillance revealed a decline in Reye syndrome incidence, possibly due to an observed decline in the use of salicylates.

Bhopal Chemical Gas Leak

Scientists from CDC were invited by the government of India to advise how to assess and handle long-term consequences of the poison gas leak at a chemical plant in Bhopal in December.

About 2,000 persons died and thousands more were injured. Because of mobility of the population involved; complexity of consequences; the high level of toxic dose and the number of people exposed, consultants worked out epidemiologic studies of the disaster and measurement of health effects on a broader scale than in previous emergencies. CDC assistance continued in 1985.



Graph representation of causes of unnecessary mortality from Journal of American Medical Association (JAMA), Sept. 13, 1985, Vol. 254, No. 10.

1984 • coalition of health officials launch campaign to boost innoculation of 8.7 million high-risk Americans for whom hepatitis B (HB) vaccine is recommended.

1985

- Dr. Donald R. Hopkins, Deputy Director, serves as Acting Director while Dr. Mason serves as Acting Assistant Secretary for Health
- *CDC provides follow-up consultation in Bhopal disaster; provides epidemiological assistance following earthquakes in Mexico and mudslides in *Puerto Rico and Columbia
- as African famine worsens, disease control and nutrition assessments conducted in Guinea, Burkina Faso, and Sudan; infant mortality and nutrition assessment conducted in Afghan refugee population in Pakistan
- Global EIS program intitiated in Saudi Arabia
- first national conference held on prevention of leading work-related diseases and injuries
- NIOSH develops recommendations for preventive and decontamination measures for PCB, dioxin, and furan exposures from transformer fires and explosions
- *attention directed to multi-drug resistant bacteria
- *CDC investigates listeriosis outbreak in contaminated cheese which claims several lives
- *WHO Collaborating Center on dracunculiasis (guinea worm disease) established
- *at CDC headquarters, groundbreaking for new virology building takes place; work begins on new lobby/front/display area
- ACIP publishes recommendation to improve vaccination coverage of adults; adult immunization emphasis to reach PHS 1990 health objectives in preventing adult cases of influenza, pneumococcal disease, hepatitis B, measles, rubella, tetanus and diptheria
- PPNG cases double from previous year
- *Public Health Laboratory Information System formulated
- CDC organizes first multi-disciplinary symposium on influenza
- "Preventing Lead Poisoning in Young Children: A Statement by the Centers for Disease Control" published
- first International Conference on AIDS held in Atlanta
- results of SENIC Project show that approximately 32 percent of all hospital infections that would otherwise occur can be prevented by well-organized, appropriately-staffed programs
- hazard communication program initiated to provide detailed information on chemical hazards to all chemical users at CDC facilities; employee exposure to potentially infectious aerosols during laboratory work decreased to zero from 35 exposures in 1980
- CDC conducts Business Systems Planning Study
- third successiveful year of involvement with disease mortality and nutrition assessment of Afghan refugees in Pakistan
- "Resource Guide: State Environmental Health Laboratory Services" published; furnishes inventory of environmental laboratory services being provided at state level and summary of comments by state officials concerning unresolved problems of environmental health programs and laboratories
- while rates for primary and secondary syphilis continue a decline first shown in 1983, gonorrhea cases continue increase begun in 1984
- CDC implements prevention and control strategies for chlamydia trachomatis infections, recognized as most prevalent sexually transmitted bacterial pathogen in United States
- tuberculosis decline slows; relationship to AIDS infection suggested; CDC sponsors conference to discuss future research leading to elimination of TB
- *CDC creates injury epidemiology and control division to accelerate progress in addressing this priority public health problem
- CDC assists in School Health Education Evaluation (SHEE) Project
- *PATCH program developed
- *Typhoid fever increase due to importation
- NIOSH produces videotape which illustrates strategy to control use of ethylene oxide (suspected carcinogen) in hospitals; conducts field studies to determine containment of production microorganisms in conventional enzyme fermentation processes and prevent future workplace disease; number of approvals of respirators used in mine safety increases to 1258—covering more than 4000 models

Typhoid Fever

During the past decade, the annual number of typhoid fever cases occurring in the United States has remained virtually unchanged. But there has been a steady increase in the proportion of cases acquired during foreign travel (from about one-third to more than two-thirds).

Most of the typhoid fever cases from 1975-1984 occurred in Mexico and India. Less than 2 percent of typhoid patients have died, and antibiotic resistance has been a minor problem. Large typhoid outbreaks are unusual, with only four outbreaks involving more than 15 persons since 1973.

Rubble and confusion marked Tecpan square in Guatemala teams assisted with health assessment and plans for disease

Listeriosis

Listeriosis is a severe illness caused by the bacterium *Listeria monocytogenes*, which is widely distributed in nature. Humans have been rarely affected by listeriosis, and it is not understood how people acquire the disease.

In 1985, 142 persons in Southern California acquired listeriosis. A total of 47 deaths occurred, including 29 perinatal deaths and 18 adult deaths. One brand of Mexican-style soft cheese was the vehicle for listeria transmission. CDC is now working to set up a passive surveillance system for listeriosis, so that common source outbreaks can be detected more rapidly, and contamination of food products can be detected and prevented.

Injury Control

CEH created the Division of Injury Epidemiology and Control in 1985 to accelerate progress in addressing injuries as a priority public health problem.

The Violence Epidemiology Branch, begun in 1983 in CDC's Center for Health Promotion and Education, became part of this division in 1986. It continues to study the intentional use of violence, reflected most notably in homicide and suicide statistics.

1985

- **July 6th—100th anniversary of Louis Pasteur's administration of the first rabies vaccine**

following a major earthquake in the early 1970's. CDC prevention.

Multi-Drug Resistant Bacteria

Infections with antimicrobial-resistant bacteria have become an increasingly important problem in the past decade. Resistance to beta-lactam antibiotics in *Haemophilus influenzae* and *Neisseria gonorrhoeae* has caused treatment failures and necessitated changes to more costly treatment regimens.

The serious consequences of drug resistance have been emphasized by epidemics of drug-resistant *Salmonella, Shigella, Vibrio cholerae* and outbreaks of resistant nosocomial pathogens, including *Staphylococcus aureus*. During this time, CDC has conducted studies that have examined the emergence, transmission, and frequency of antimicrobial resistance and has linked resistance to appropriate and inappropriate use of antimicrobials in humans and animals.

PATCH Program

In 1985, CDC developed the Planned Approach to Community Health (PATCH) program to provide a forum through which key health education professionals and citizens plan, conduct and evaluate health promotion programs at the community level.

Through PATCH, representatives from the state health department, the local health agency, local community workers, citizens and CDC staff form an active partnership of putting into place health promotion programs designed to meet the priority health needs of each community.

International Disaster Relief

In the wake of flood and famine, high winds and earthquake, CDC teams offer disaster assistance to many nations. For example, in 1985, specialists consulted about ways to help maintain safe drinking water and sanitation systems for the people of Mexico City following a major earthquake.

Other CDC staffers developed procedures for dealing with injuries caused by mudslides after eruption of the volcano Nevada de Ruiz in Colombia. Epidemiologists investigated a hepatitis B outbreak in refugee camps in Somalia. Applying the epidemiologic method to disaster response, systematically collecting information, assessing conditions and identifying vulnerable sub-populations, has proved useful in setting priorities for relief activities.

Through the Crisis Response Activity in the International Health Program Office, CDC has coordinated 91 overseas disaster relief missions since 1980.

Radiation

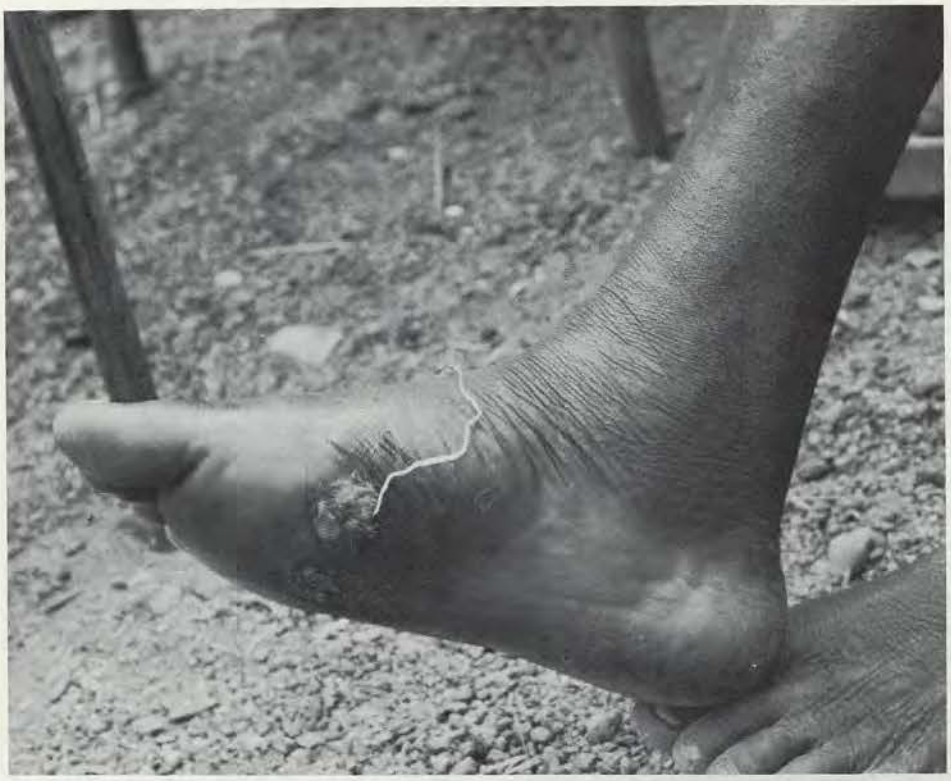
For several years, CDC's Center for Environmental Health (CEH) has responded in emergency and non-emergency situations involving possible radiation exposure. For example, it has conducted hazard assessments at nuclear testing sites and conducted studies to determine radiation effects and prevent public exposure.

Among CEH's radiation-related research and surveillance activities in 1986 were: 1) studying lung cancer rates in areas with the potential for elevated radon levels; 2) completing the active follow-up of the "Smoky" epidemiologic study of nuclear weapons test participants; 3) conducting nationwide surveillance for suspected cancer cases associated with radioactive gold jewelry; and 4) evaluating the cancer risk to Alaskan natives due to exposure to fallout from nuclear weapons testing.

1986 activities have included: investigations of lung cancer rates in areas with elevated radon; follow-up of "Smoky" participants for incidence of non-hematopoietic cancers; and study of the feasibility of investigating cancer risk from radium in water.

Recent research, sponsored by CDC, indicates that school health education is effective in preventing lifestyle choices potentially harmful to health.

- **mudslides in Puerto Rico and Colombia; earthquakes in Mexico**



Guinea worm leaves its temporary lodging—a human foot—after playing a role in the transmission of dracunculiasis. Disease has been targeted for eradication by WHO.

Public Health Laboratory Information System Formulated

CDC, in collaboration with the Association of State and Territorial Public Health Laboratory Directors (ASTPHLD), reached agreement during 1985 on performance standards for a major new initiative for CDC. The Public Health Laboratory Information System (PHLIS) will provide a database located at CDC containing operations management data for existing reports used by CDC and ASTPHLD.

As of 1986, software and hardware requirements have been met for getting PHLIS underway. New data elements and report formats are being developed for laboratory-derived data. These will facilitate dissemination of critical public health findings regionally and nationally and assist in the appropriate analysis and interpretation of these findings for intervention purposes.

Each year, state laboratories collectively process more than 23 million specimens and perform an estimated 235 million analyses on these specimens. State health officials are facing a dilemma as requests for public health laboratory services increase while public funding support is decreasing. The PHLIS will facilitate more effective and more timely intervention efforts with the investment of fewer federal resources.

New Virology Building Scheduled for '87 Completion

The new virology building at CDC will be a state-of-the-art maximum containment laboratory—"the Public Health Service's only such facility for diagnosis and control of highly hazardous, exotic diseases," said CDC Director Dr. James O. Mason during groundbreaking ceremonies Dec. 2.

The maximum containment level is required for work with agents which pose a high individual risk of life-threatening disease. Examples of such diseases are Lassa fever, Ebola hemorrhagic fever and Rift Valley fever. Other agents requiring a lower level of containment will also be handled in the new facility. Among these are Rocky Mountain spotted fever and the AIDS virus.

WHO Collaborating Centers

The World Health Organization designated CDC a collaborating center for research, training, and control of dracunculiasis (guinea worm disease) in 1985.

Other WHO centers at CDC in 1986 are: AIDS; antibiotics and antibiotic substances; arbovirus reference and research; blood lipids reference and research; diagnostic methods and materials research and reference; enteric phage typing; enterovirus reference and research; escherichia; hepatitis reference and research; influenza; insecticides research; klebsiella; leptospirosis; malaria; *Mycobacterium leprae;* mycotic diseases; occupational health; perinatal care; plague reference and research; rabies reference and research; respiratory virus diseases other than influenza; rickettsial reference and research; salmonella; shigella; smallpox and other poxvirus infections; staphylococcus phage typing; special pathogens virus reference and research; and treponematoses reference and research.

These centers monitor epidemics, study the properties of the viruses and bacteria involved, provide resources to facilitate and standardize the work of collaborating laboratories, provide information and reference materials, evaluate vaccines, improve laboratory methodology, and conduct research.

A scale model of CDC's new virology building gives a futuristic look to research facilities now under construction.

1986

- total budget: $451,571,000 (includes $62,133,000 for AIDS)
- total personnel: 4,278
- CDC celebrates 40 years of disease prevention and control (July 1)
- *violence epidemiology becomes part of injury epidemiology and control division at CDC; pilot studies on injury control assumed
- new office (pending Secretarial approval) created to combine laboratory program and professional development and training activities
- by mid-year reported AIDS cases pass 20,000; over half of these have died
- new visitor reception area at CDC headquarters completed and main lobby renovated to include: two lobby/waiting areas, visitor services room, two meeting rooms which can be converted into large conference room, and series of wall cases and free-standing panels displaying CDC's achievements and history
- Business Systems Planning Study completed; one recommendation results in formation of Information Resources Management Office to oversee all functions of data processing, office automation, telecommunication, and library
- NIOSH celebrates 15th anniversary (April 29)
- *WHO Collaborating Center for Dracunculiasis established at CDC
- thirty-four states and District of Columbia participate in CDC-coordinated Nutrition Surveillance System
- Global EIS programs planned for initiation in India and the Philippines; Mexico and Taiwan graduate first EIS classes
- *CDC pursues prevention leads in area of birth defects
- Charles C. Shepherd Science Award established

Injury Research Program

In fiscal year 1986, CDC was given the Congressional charge of establishing a national injury prevention research center. CEH heads this expanded effort on intentional and unintentional nonoccupational injuries.

Congress has appropriated $10 million to National Highway Traffic Safety Administration of the Department of Transportation (DOT), which will go to CDC to begin a three-year pilot project implementing the recommendations in the National Academy of Sciences report, *Injury In America*. Two million dollars will be used to support an injury control program at CDC, and $8 million will be used to support injury research grants.

Birth Defects

To obtain baseline surveillance data on birth defects, CEH monitors, on a quarterly basis, 25 percent of the nation's births. A variety of epidemiologic studies seeking clues to the causes of birth defects are being conducted.

CEH's work in reproductive epidemiology has resulted in important new leads to causes and prevention. Significant contributions have been made to establishing the causal relationship between valproic acid, a new anticonvulsant, and spina bifida . Another etiologic association was discovered between Accutane, a vitamin A coneger used in acne therapy, and a complex of very severe cardiac, CNS, and facial birth defects.

In 1986, CEH will pursue two prevention leads: 1) the suggested association between high doses of vitamin A during early pregnancy and birth defects and 2) a feasibility study for a clinical trial to determine whether vitamin supplementation will prevent NTD's.

A considerable amount of time and effort is invested in technical consultation, technology transfer, and capacity-building. This includes advising and supporting state and local governments, other federal agencies, and international agencies in the design, conduct, analysis and evaluation of epidemiologic studies of outcomes, such as birth defects, developmental disabilities, SIDS, spontaneous abortion, infant mortality, and the chronic diseases of childhood.

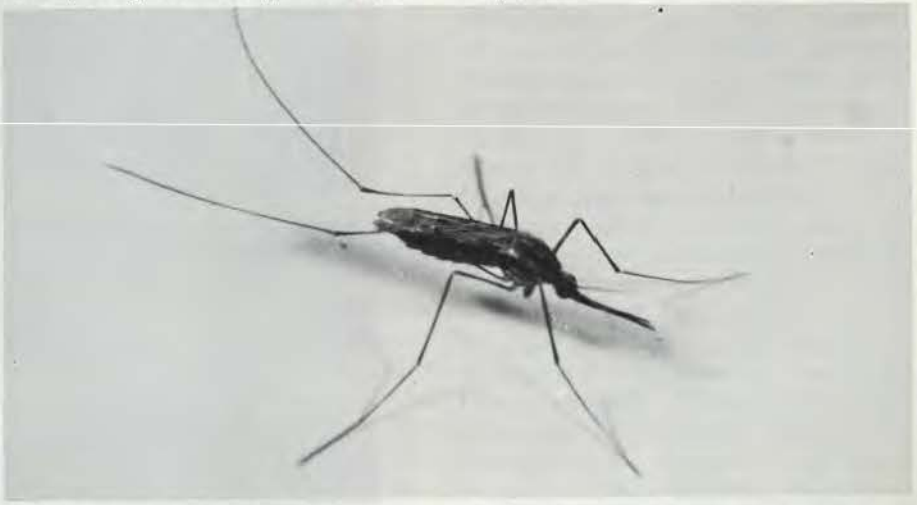
In 1984, CDC completed a study on the risks for Vietnam veterans of fathering babies with birth defects; no evidence of a greater risk for veterans was found.

Malaria

Malaria transmission by mosquitoes no longer occurs in this country, yet malaria is an important public health problem in the developing world.

Over the past decade, CDC's malaria program has promoted effective therapy of malaria infections by compiling and disseminating information on diagnostic procedures, geographic variations, malaria incidence, drug sensitivity, and therapeutic strategies. CDC is active in the development and evaluation of malaria vaccines and in a program to define the prevalence of drug resistance to malaria in Africa.

CDC's Malaria Branch is evaluating malaria control strategies such as the Combatting Childhood Communicable Disease Program in Africa, which promotes effective primary health care delivery systems.



Anopheles, the Greek word for "harmful," is also the name for a genus of mosquitoes which transmits malaria. Malaria afflicts an estimated 200 million people worldwide, killing 2 million each year.

1986

- **World Health Assembly adopts resolution to eliminate dracunculiasis**

New Disease Problems Emerge

(from page 3)

to control and prevention of viral diseases in 1885 when he gave the first dose of rabies vaccine to a young boy bitten by a rabid dog. Scientists in many laboratories have studied viral illnesses and their prevention in the years since. In the 1950s CDC conducted early poliovirus studies which contributed to development of the oral polio vaccines. It has studied viral hepatitis, it spearheaded the drive to eradicate smallpox, and it was one of the first health agencies in the nation to begin work on the Acquired Immunodeficiency Syndrome (AIDS) in 1981. Despite progress in virology and medical science during the past 40 years, viruses still cause the major portion of acute infectious illness in the United States.

Within the next decade, it is possible that more may be achieved in preventing disease and death from infections than was achieved during the last four remarkable decades.

The Center for Prevention Services (CPS) conducts programs to control and prevent sexually transmitted diseases, vaccine preventable diseases, dental disease, and tuberculosis. In addition, a diabetes control program, dental disease prevention program and foreign quarantine program are located there. CPS is a major direct action link to state health agencies. Current challenges in this area include control of emerging "new" sexually transmitted diseases, including AIDS; liability concerns related to childhood immunization; public health needs related to refugees settling in the United States from Third World nations; the opportunity to eliminate tuberculosis, one of the most stubborn infectious diseases for public health action, and wide interest in diabetes as the "prototype" chronic disease. To confront these challenges, CDC offers states technical assistance, direct assistance with both people and money, surveillance, and sophisticated modern electronic communications networks. The rapid communication of public health data and information may be a major factor in shaping CDC-state relationships during the next 40 years.

The National Institute for Occupational Safety and Health (NIOSH) marks its 15th anniversary in 1986. It was established by the Occupational Safety and Health Act of 1970 and given major new authorities. Among these, the "right-of-entry" to worksites and the "right-of-access" to records are especially important. NIOSH enters more than 500 worksites each year, on request, to gain current knowledge of health problems related to the work environment. Problems associated with new technologies, such as video display terminals, are usually identified soon after the technology appears in the workplace and the accumulation of data begins. NIOSH is currently working to improve surveillance of work-related problems so as to accurately define a national perspective of these diseases, injuries, and hazards. Five of 10 leading causes of injury and death in the workplace have been targeted for prevention strategies and new strategies are being developed for five others.

The Center for Health Promotion and Education brings together the personal health and lifestyle programs previously located in three bureaus.

It is estimated that nearly 50 percent of all postponable death and disease is associated with behaviors that can be changed. As recommended by a 1970 President's Commnittee on Health Education, CDC has put high priority on health education programs to support changes in behavior which are associated with illness or unnecessary death. The Center is a leader in the physical activity and exercise components of the PHS 1990 Objectives, and is CDC's focal point for program activity in smoking cessation efforts.

Recent research supports the success of health education in preventing health problems among Americans of many ages. Among 7th graders who received school health education, 31 percent fewer reported that they smoked in comparison to those who did not receive school health education. A study among Zuni Indians showed that a community-based exercise program helped diabetes-prone adults in the community lose weight and decrease their dependency on diabetes medication. The Center's Planned Approach to Community Health (PATCH) provides technical assistance to states to help identify priority health problems and to begin educational interventions to resolve those problems.

(See next page)

Lilly Pinneo, a nurse in Jos, Nigeria, cared for a Lassa Fever patient in the February 1969 epidemic. She contracted the disease and was evacuated to New York City by Dr. Lyle Conrad of CDC. She is the first known survivor of Lassa Fever.

Zuni adults drop pounds through exercise and reduce their dependency on medication for control of diabetes. Community-based fitness programs make a difference for Americans of all ages.

Community focus on health Benefits many Americans

(from page 26)

In reproductive health, CHPE has increasingly focused on low birthweight and Sudden Infant Death Syndrome, in an effort to understand the perplexing problems associated with infant deaths and fund new avenues of prevention. One priority is a program to reduce smoking in pregnancy. CHPE also participates in the Centers' major chronic disease effort, and has launched a significant state-based cardiovascular disease prevention program.

Since 1980, CDC has done surveillance of the nutritional status of pregnant women and strategies are currently being developed for the surveillance of other high-risk groups. Thirty-four states and the District of Columbia now participate in the surveillance system, which is recognized as the major source for state-level information on the nutritional status of high-risk, low-income populations of the United States.

In 1981 CHPE also began helping states to conduct telephone surveys to determine the prevalence of major behavioral risks in adult population.

Today, an on-going surveillance system, the Behavioral Risk Factor Surveillance System, is operating through cooperative agreements with 25 states and the District of Columbia. It provides states with baseline and trend data on such important health issues as smoking, uncontrolled hypertension, lack of exercise, overweight, alcohol misuse, drinking and driving, and seatbelt use.

In addition to the Centers, three Program Offices implement CDC's expanded responsibilities of the last two decades of the 20th Century. The Epidemiology Program Office, the International Health Program Office, and the Laboratory Improvement Program Office (soon to become the Training and Laboratory Program Office), direct external relationships in their areas of expertise.

The Epidemiology Program Office is a CDC-wide focus for overall epidemiology and surveillance functions, recruitment and management of the Epidemic Intelligence Service, and the coordination of epidemiologic assistance requests. In 1985, CDC epidemiologists investigated over 680 outbreaks of disease or disability.

Speed of communication and compatibility of epidemiologic data spell the future for disease prevention programs at every level. EPO has developed an electronic surveillance system which allows states to transmit surveillance data via computers. With the system, CDC speeds analysis of demographic and epidemiologic data, and returns results to the states. Twenty-three reporting areas are using the system now—all states should be hooked into the system by 1990.

To further refine data collection and analysis at CDC, EPO is developing a plan for uniform collection of surveillance data by all CDC units. The plan should be completed by summer 1986.

The EIS summer course, a popular short course in practical epidemiology, now offers a domestic track and an international track in addition to its required "core" courses for epidemiologists. In addition to completing the course, new EIS officers must now conduct an epidemiologic investigation; design, implement, revise or evaluate a surveillance system; prepare a scientific paper for publication; make an oral EIS Conference presentation; make a presentation at the EPO Professional Staff Seminar or its equivalent; and respond effectively to public inquiries.

Following training and EIS service at CDC, career epidemiologists are now assigned to states to enhance state-based epidemiology programs. By 1990 each state should support a functioning, comprehensive epidemiology program, including specialists in the fields of chronic disease, environmental health, and occupational health

CDC Employee Deaths

Dr. Paul Schnitker, EIS Officer, was killed in an airplane crash in Lagos, Nigeria in the fall of 1969. Dr. Schnitker was assigned in 1969 to the California State Health Department. He had been on duty for six months when he volunteered to go to Lagos to aid in the Nigeria-Biafra Civil War Relief Effort. Dr. Schnitker's London-to-Lagos flight was circling to land in Lagos when the airplane was blown up in mid-air. Dr. Schnitker is buried in Lagos, Nigeria.

In February of 1977, two CDC employees, Robert Dubingon and George Flowers died suddenly and tragically. Their deaths were caused by Rocky Mountain Spotted Fever. Their infection was almost certainly acquired in the area in which they worked. They were the first laboratory-related deaths in the history of CDC. Following the deaths, a thorough evaluation of laboratory safety procedures was done to assure the safest possible conditions for CDC employees.

International Goals, Objectives

(from page 27)

as well as infectious diseases.

The International Health Program Office (IHPO) coordinates the Centers' growing international health involvement. Fifteen to 30 percent of infants born in the developing world die before their fifth birthday. At least half of these deaths are preventable by existing cost-effective technologies. With support from the US Agency for International Development (AID) and in cooperation with WHO and UNICEF, CDC has a major international health objective—the strengthening of national capabilities, within developing nations, to reduce morbidity and mortality and improve health.

CDC shares technology (technical information, reference laboratory support, and training courses) with health workers at all levels. However, a more powerful tool is the interpersonal relationship which develops between health workers of different nations when they work at the field level to identify and solve health problems as a team. Development of training materials in Atlanta, training of trainers in Togo, field training in Lesotho, training evaluation in Malawi, all contribute to upgrading skills of people from different nations who provide hands-on public health care. CDC is still fighting malaria with chloroquine sensitivity studies in Malawi, surveys of the way mothers of Rwanda treat their childrens' fevers, and development of a national strategy to reduce malaria morbidity and mortality in Zaire.

The Training and Laboratory Program Office will apply state-of-the-art training technology, including computer-assisted instruction and teleconferencing to the rapid transfer of necessary knowledge and skills to the nation's public health community. With these resources, private and public health facilities will be able to apply the most appropriate and current techniques to detection of disease, its diagnosis, and management.

To more effectively coordinate CDC's prevention activities with those of other PHS agencies and other components of HHS, a staff-level office was created in Washington in 1980. At the same time, to streamline administrative operations and improve productivity throughout CDC, the Office of Program Support was established at headquarters in Atlanta.

Sun rises over construction site of CDC's new virology building.

CDC shares technology (technical information, reference laboratory support, and training courses) with health workers at all levels.

Automation is the order of the day. Word processors, microcomputers and computer terminals have appeared all over CDC. From laboratory to office, from finances to surveillance data, the impact of microelectronics is obvious to CDC staff.

High technology alone will not solve public health problems of the next decades. The people of CDC have always been its major resource and will continue to be. CDC is proud of its legacy of excellence—a legacy handed down through 40 years by talented people dedicated to better health and quality life for all Americans. To honor that legacy, CDC moves into the fifth decade with resolve to spread those benefits to people throughout the world.