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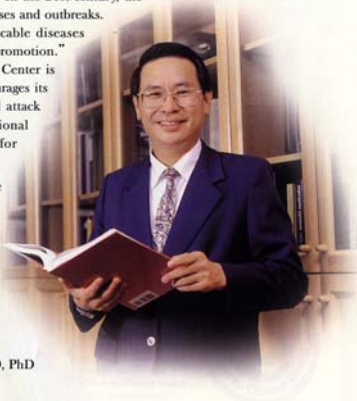
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prevent communicable diseases promptly and professionally;
mobilize all people for health promotion

In the 1950s, communicable diseases occupied the top position of the ten leading causes of death in Taiwan. Taiwan managed to overcome the crisis posed by these communicable diseases. For example, plague, smallpox, rabies, malaria, and poliomyelitis have been eradicated in Taiwan. Taiwan has also successfully controlled and followed other communicable diseases such as measles, hepatitis B, and dengue fever. However, Taiwan now also faces the global control following increasing threats of emerging and re-emerging diseases such as HIV and drug-resistant tuberculosis.

Since its establishment on July 1st, 1999, the Center for Disease Control has earned an outstanding reputation. For instance, during the devastating Nantou earthquake, the Center was in full of the situation control and there was no disease outbreak. In the 21st century, the Center prepares its staff for prompt response to unknown diseases and outbreaks. Therefore, the Center has as its vision "prevent communicable diseases promptly and professionally; mobilize all people for health promotion." Community participation is the key to disease control, so the Center is also dedicated to research and development. The Center encourages its staff to stay alert and actively collect disease information and attack outbreaks. Finally, the world is becoming smaller. International cooperation is one of the Center's adopted approaches for fighting communicable diseases with its global counterparts.

Looking back and facing forward, the Center has the responsibility for providing a healthy environment for the people of Taiwan. The Center is devoted to fighting not only microorganisms, but also the unavoidably enemy- time. The Center wishes to build up a lasting foundation for the control of communicable diseases.



Shiing-Jer Twu

Shiing-Jer Twu, MD, PhD
Director-General
Center for Disease Control



About CDC

The goal is to promote national health by preventing disease through active involvement, sound healthcare networks, expertise and proficiency, the full participation of all people, and participation in international activities, and by implementing prevention and control measures against communicable diseases.



Introduction

In the recent years, with dramatic increases in international exchange and travel and the amount of foreign labor, various communicable diseases have been imported. Facing the threat of emerging diseases and the recurrence of indigenous communicable diseases, the existing policies on disease prevention, quarantine, and surveillance, and the capabilities of laboratory testing and research are considered inadequate to meet the needs of disease control. In coordination with the rapid development in high technology and the trend of internationalization, disease control must be more comprehensive,



prompt, effective and international. The goal of the Center for Disease Control, therefore, is to combat the threat of communicable diseases.



Development

To deal with the changing patterns of communicable diseases, to consolidate disease control resources, and to establish a disease control system to face the challenges of the 21st century, the Center for Disease Control of the Department of Health was established on July 1, 1999 under the Organization Law of the Center for Disease Control, the Department of Health, promulgated on February 3, 1999. The Center was established by merging the Bureau of Communicable Disease Control, the National Institute of Preventive Medicine, and the National Quarantine Service of the Department of Health.

The "C" with an upward arrow symbolizes the continuous progress to reach the goal of better health and quality of life.

The whole green circle outward means the perfect wellbeing under CDC's professional efforts.





Legal basis

- Law on the Control of Communicable Diseases (promulgated on June 28, 1999);
- Law on the Prevention and Control of AIDS (promulgated in 1999); and some ten regulations relevant to the above laws.

Vision

To prevent diseases promptly and professionally; and to mobilize all people for health promotion.

38 notifiable diseases

Category	Diseases
I	cholera, plague, yellow fever, rabies and Ebola hemorrhagic fever
II	Type A encephalitis, typhoid fever, paratyphoid, anthrax, typhus, diphtheria
	Type B poliomyelitis, bacillary dysentery, amebic dysentery, open tuberculosis
III	Type A dengue fever, malaria, measles, acute hepatitis A, Entero-hemorrhagic E. coli infection, the enteroviral infection with complications
	Type B tuberculosis except the open type, Japanese encephalitis, leprosy, rubella, congenital rubella syndrome, diphtheria, scarlet fever, pertussis, scrub typhus, acute viral hepatitis except type A, mumps, varicella, legionellosis, invasive Haemophilus influenzae type b, syphilis, gonorrhoea, influenza
IV	Any other infectious disease or emerging infectious disease which has been reckoned by central governing agency as necessary may be added to the list

Principles

Flexibility in Disease Control

Disease control measures will stay flexible to positively cope with disease outbreaks at any time; to develop capability in crisis management; to actively collect domestic and international disease information; to stay alert at all time; and to promptly handle disease outbreaks.

Information-based Strategies

A complete information network including a reporting system for notification of disease outbreaks, a reporting system for syndromes, a geographic information system for communicable diseases, an on-line disease surveillance system, and an information system on immunization will be set up for better coordination. Disease control organization will have immediate on-line access to necessary information for more effective and prompt disease control.



▲ *Reestablishment in the disaster areas.*



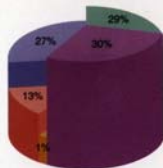


Professionalization

Efforts will be made to recruit experts, encourage research, and apply scientific methods to disease control. Control measures will stay transparent and objective. Disease control manpower will be developed and professionals recruited to upgrade the professionalism of our disease control team.

Education Levels of CDC's Staff

- Graduate School
- Colleges
- Junior
- University
- High School



Involvement of All People

Communicable diseases are preventable through various approaches. The effective control of outbreaks and transmission of communicable diseases, however, depends greatly on the public's understanding of communicable diseases and their prevention measures. Disease control requires the full participation and cooperation of all people.

Internationalization

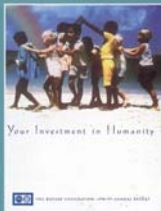
The Center will continue to actively promote participation in international disease control activities, and to establish close communication and cooperation with all countries in the world. Disease prevention will be used as a channel to facilitate the entry of Taiwan into the World Health Organization as a member.



▲ Hand washing campaign collaborated with McDonald's.



▲ Dr. Ming-Liang Lee, Minister of Health of Taiwan, giving a speech in the national hand-washing campaign.



▲ A pledge of contribution for international polio eradication to Rotary International.

A timely gift from Taiwan

In May, 1998-99 RI President James Lacy traveled to Taiwan to accept a US\$1 million contribution for international polio eradication from President H.S. Lee. Ting-hui on behalf of his government. Taiwan has pledged an additional US\$4 million over the next four years. The contribution will be instrumental in combating polio in some of the poorest countries in Africa and South Asia and help advance diagnostic and surveillance systems in developing countries.



Functions

1. Planning of disease control system and drafting of relevant laws and regulations.
2. Prevention, control, survey and research of various communicable diseases.
3. Management of disease outbreaks.
4. Reporting of domestic disease information and surveillance of disease.
5. Collection, exchange and reporting of international disease information.
6. Procurement and management of drugs for disease control.
7. Planning and promotion of immunization; compensation for victims of vaccine-related hazards.
8. Manufacturing, supply, research and development and technology transfer of vaccines and biological products.



▲ The *Epidemiology Bulletin* published weekly by CDC.



◀ Quarantine service at airport.

9. Laboratory testing for various diseases.
10. Formulation of laboratory testing standards of various diseases; verification of laboratory testing.
11. Quarantine and sanitary control of international ports.



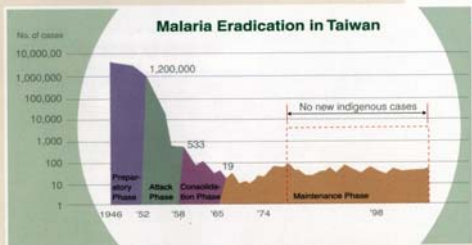
12. Planning, promotion and supervision of the sanitation of business establishments.
13. Health management of foreign laborers.
14. Directing and supervising local health organizations for disease control.
15. International cooperation and exchanges on disease control.
16. Manpower development for disease control.
17. Other matters related to research and development, quarantine of disease control and preventive medicine, and instructions on disease control of the Department of Health.



▲ Poster for hand-washing campaign.

Achievements

1. Plague was eradicated in 1948.
2. Immunization began in 1948 to reduce incidence of various communicable diseases (diphtheria toxoid in 1948, DPT in 1955, BCG in 1965, oral polio vaccine in 1966, Japanese encephalitis in 1968, measles in 1978, hepatitis B in 1984, rubella in 1986, and MMR in 1992).
3. Smallpox was eradicated in 1955.
4. Rabies was eradicated in 1959.
5. Malaria was eradicated in 1965.
6. Immunization against hepatitis B began in 1984. The carrier rate among children had been reduced by 84% by 1988.
7. Immunization against hepatitis A began in 1995. Ever since, no outbreaks have occurred in the mountain areas.



8. Immunization against influenza for the elderly began in 1998. Hospital care rate for the elderly has been reduced by 54%.
9. Polio was eradicated in 2000.

Vaccine Given Against Hepatitis B

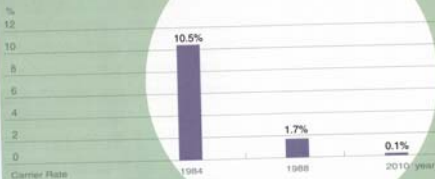


*From July 1991, children are required to submit their immunization records to enter primary school. If missed or incomplete, hepatitis B vaccine is given.



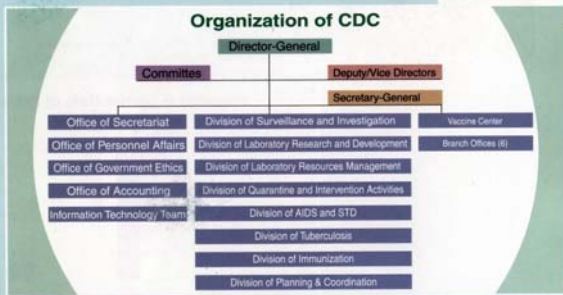
◀ The celebration ceremony for poliomyelitis eradication in Taiwan. (Oct 2000)

Hepatitis B Carrier Rate of Pre-school Children



Organization

The Center has eight divisions, one center, and six branch offices.



Division of Planning & Coordination

Vision:

The CDC is the national authority on the prevention and control of infectious diseases, and is in charge of setting the related national policies, strategies, and plans. This Division is responsible for the over-all planning and coordination of the operation of the CDC. The major responsibility is to employ scientific management techniques to plan and oversee the operation programs set up for each year. Tasks include research and development of technology; international interactions and cooperation, health education, collection and management of publications, study and amendment of the regulations on prevention and control of infectious diseases, etc. In addition, the Division is in charge of the over-all planning and execution of various training programs, which are designed to promote the professional abilities of infectious disease prevention and control personnel at all levels through on-the-job training and re-education.



▲ Fight against tuberculosis



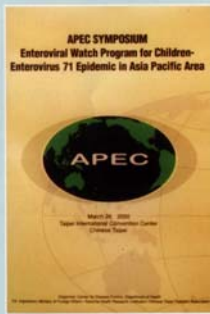
▲ Brochure for Enterovirus and Hantavirus intervention activities.

Mission:

1. **Diversified health education:** provide health education with multiple channels, audience orientation, and community participation.
2. **Up-graded training:** provide various levels of training courses, so that disease-prevention personnel in local health agencies can obtain essential and comprehensive knowledge and skills pertinent to their jobs.
3. **Regulated, standardized, and open technology development:** establish a system for planning and evaluating research on disease prevention that is regulated, standardized, and open.



▲ *Regulations for infectious disease control.*



4. **Realization of the globalization of disease prevention:** promote and develop the exchanges of technology, personnel, and training with allied Asian-Pacific, European, and American countries.
5. **Enforcement of regulations, prospective planning, and establishment of evaluation systems:** promote and implement the management of disease prevention by local governments through evaluation systems.

▲ *APEC Symposium on Enterovirus was held in March 2000 by CDC.*

Division of Surveillance and Investigation

Vision:

Construct nationwide infectious disease surveillance systems. Closely monitor the occurrence of infectious diseases, detect epidemics in early stages, promptly explore the factors behind disease outbreaks through epidemiology investigation, and prepare well-trained and skilled epidemiologists.



Mission:

1. Construct diversified disease surveillance systems.
2. Promote epidemiology analysis and epidemic prediction of seasonal diseases.
3. Improve epidemiology investigations among health personnel.
4. Apply state-of-the-art technology and equipment to the surveillance, investigation, and prevention and control of infectious diseases.

*Emergency Responder ▶
Chemical and Biological
Escape kit.*



Division of Laboratory Research and Development

Vision:

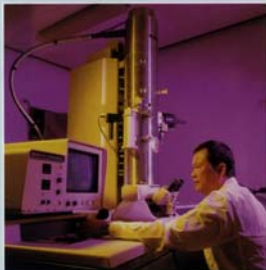
Integrate research and development on domestic infectious diseases, and advance capability and quality of laboratory examinations.

Missions:

1. Integrate various research on infectious diseases effectively.
2. Develop faster, more specific laboratory test kits and procedures.
3. Provide credible information about laboratory examination to enhance intervention activities.



▲ Advanced examination in P-3 laboratory.



◀ Transmission electronic microscope.



▲ Microscope for group observation.

Division of Laboratory Resources Management

Vision:

"Service fast and professional will help KunYang relax;

Inspection and research must improve, quality control cannot be lax!"

Mission:

To use speedy efficiency, professional knowledge, rich resources, and whole-hearted service in order to provide our inspection and research colleagues in the KunYang office a pleasant environment, please note the following:

1. Establish standard working rules for the collection of fluid samples and biological materials.
2. Collect all important national agent strains to supplement research materials.
3. Provide excellent lab animals and a competent service to raise them.
4. To establish quality control policies and roles in order to help increase inspection and research quality.
5. To provide research and examination units with excellent logistic and administrative support.



▲ *Venom harvesting.*



▲ *Mosquito larvae.*



▲ *Larva breeding tanks.*



▲ *Animal breeding for laboratory use.*

Division of Quarantine and Intervention Activities

Vision:

To prevent the three types of international quarantinable diseases, namely CHOLERA, PLAGUE, and YELLOW FEVER, from entering the country through vessels, aircrafts, and other means of transportation and endangering national public safety, the Department of Health has promulgated "Regulations Governing the Quarantine at International Port" in accordance with "Law on the Control of Communicable Diseases".



▲ Mosquito breeding site investigation.



These regulations request all branch offices of the CDC to execute necessary quarantine measures on all vessels, aircrafts, crew, passengers and commodities (aquatic products) at time of arrival at or departure from international port to protect the health of our nationals.

The principal guiding our quarantine measures is the prevention of the spread of major international quarantinable diseases in order to achieve the highest level of safety with minimal interference to international transportation equipment. This principal was set up in reference to and respect for the goals and spirit of the International Health Regulations of the World Health Organization.

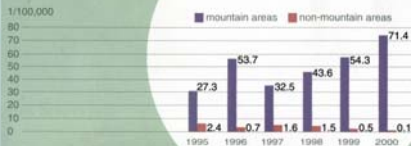
1. Vessel quarantine.
2. Aircraft quarantine.
3. Personnel quarantine.
4. Imported aquatic product quarantine.
5. International vaccination and the issue of international vaccination certificates.
6. Distribution of prophylactic agents for malaria.
7. Health education and public health services
8. Governing of the health of alien workers.

The Distribution of *Aedes aegypti* in Taiwan



▲ *Dengue-free: to approach zero indigenous dengue cases.*

Incidence Rate of Bacterial Dysentery in Taiwan



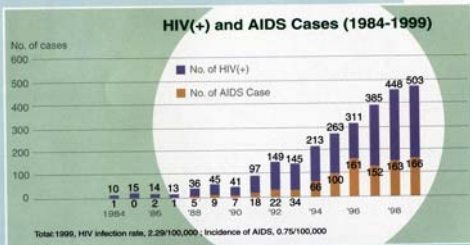
Mission:

1. Simplify the quarantine procedures to promote administrative efficiency.
2. Strengthen regulations on the health of alien workers to prevent imported infectious diseases.
3. Promote voluntary vector control program on vessel quarantine.

Division of AIDS and STD

Vision:

Preventing and controlling AIDS, and STD through surveillance, statistics, analysis and health education.



The Distribution of HIV Positive Cases in Taiwan (1984-1999)



Mission:

1. Limit the annual increase in HIV infection victims to no more than 15%.
2. Limit the new victims of Leprosy to no more than 5 people per year.
3. Prevent the uninfected from infection and make sure the infected receive proper medical care and improved quality of life.



▲ Health education programs on AIDS.



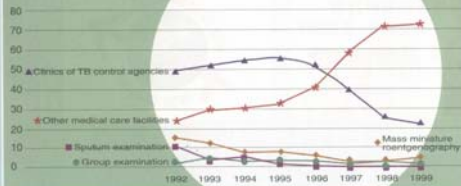
Division of Tuberculosis

STOP

Vision

1. Construct a complete model for the local spread of TB.
2. Taiwan's TB situation must show an obvious decrease, decreasing faster than in other countries with similar TB rates.
3. Whether male or female, old or young, every citizen must have the proper knowledge, attitude, and behavior for TB prevention. Whether rich or poor, or no matter where they live, every TB patient has an equal chance to receive the highest quality care and treatment.

Case Finding of TB in Taiwan, 1992-1999



Mission:

1. To strive for government prioritization of tuberculosis prevention, and to establish long-term (or at least intermediate-term) promises of government support.
2. To strengthen horizontal contact with other contagious disease prevention work and blend TB prevention into the whole epidemic prevention system for full support and cooperation.
3. Combine treatment and epidemic prevention systems and improve diagnostic accuracy to control epidemic conditions; raise the quality of treatment and management and effectively block transmission.
4. Review and adjust current prevention steps; apply international standards to epidemic needs, social environment, and economic efficiency.
5. Consolidate all national TB prevention work, working hard to lessen the differences in various organizations visions and goals.
6. Supervise and counsel each city and county to actively discover each local individual TB prevention problem, using each places resources to propose and push unique prevention plans.
7. To maximize efficiency by discussing and adjusting current arrangement and allocation of man power.
8. Discuss the current function and role of every layer within the organization, suggesting necessary adjustments.
9. Establish intermediate and long-term prevention goals and plans.



Division of Immunization

Vision

Collecting and analyzing the surveillance data of vaccine-preventable diseases, promoting the research and development of vaccination, assessing the yield of vaccination, setting national policies on vaccination, operating the vaccine injury compensation program, designing the information system for vaccination, and planning and implementing specific vaccination programs.



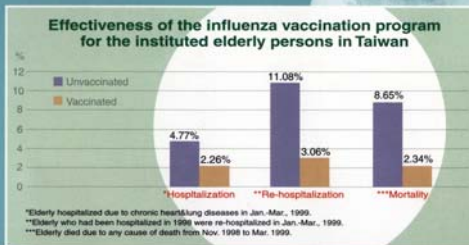
In addition, the Division is responsible for the procurement, the distribution, the allocation, and the management of vaccines and other biological agents, for the planning and management of the cold chain for vaccines, and for related field works such as the survey and supervision of vaccination coverage rates.

History of EPI in Taiwan

- ◇ 1948 Diphtheria Toxoid
- ◇ 1955 DTP
- ◇ 1965 BCG
- ◇ 1966 OPV
- ◇ 1968 JEV
- ◇ 1978 Measles
- ◇ 1984 HB
- ◇ 1986 Rubella
- ◇ 1992 MMR

Mission:

1. Constructing a serological database of the vaccine-preventable diseases among Taiwanese.
2. Increasing the kinds of available vaccines.
3. Completing programs to eradicate polio, measles, congenital rubella syndrome, and neonatal tetanus.
4. Establishing a nationwide united vaccination information system.
5. Overcoming the bottlenecks of vaccination coverage rates.



▲ The national OPV(oral polio) vaccine) vaccination campaign in 1993.

Children's vaccination recording cart. ▶



Vaccine Center

Vision:

1. Establish an antivenin serum production and research center as well as an animal experiment center.
2. Aggressively develop the vaccine for Enterovirus type 71 and its mass production.
3. Construct a comprehensive vaccination information system.
4. Effectively manage the serum bank and offer comprehensive research and surveillance services.



▲ Small scale fermentor for vaccine research and development.



Mission:

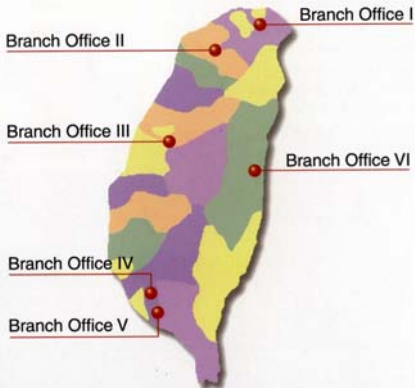
1. To fulfil the requirements of disease control, ten types of biological agents are produced and supplied to the health-care units nationwide, including tetanus toxoid, adsorbed tetanus and diphtheria (DT) toxoid, adult adsorbed tetanus and diphtheria toxoid, BCG, frozen crystallized anti-sera against the hundred pace snake (*Deinagkistrodon acutus*), frozen crystallized combined anti-sera against umbrella snake (*Bungarus multicinctus*) and Chinese cobra (*Naja naja atra*), frozen crystallized combined anti-sera against turtle-designed snake (*Trimeresurus mucrosquamatus*) and Taiwan bamboo viper (*Trimeresurus stejnegeri*), frozen crystallized tetanus antitoxin, frozen crystallized diphtheria antitoxin, tuberculin, etc.
2. Laboratory animal breeding and management; immunization and sampling blood from horses; breeding venomous snakes and extracting venom; breeding mice; bleeding, quality-controlling, testing, and development of laboratory animals.
3. Research and development of new vaccines, such as cell-cultured Japanese encephalitis vaccine, BCG for treatment use, anti-sera against chain snake (*Daboia russellii formosensis*), and the vaccine for Enterovirus type 71.
4. Serum banking with comprehensive specimen deposit and withdrawal services to facilitate post-marketing epidemiological studies of anti-body titers induced by vaccines.
5. Supervise the operation, including hardware and software, of GMP plants and implement over-all quality assurance programs.





▲ Bio-products including freeze-dried BCG vaccine, tetanus toxoid, cholera vaccine, DT toxoid, and antivenins etc..

Branch Offices

To assist the health agencies of the local governments in disease prevention and control and to gather information on infectious diseases, the CDC has six branch offices located in the northern, central, southern and eastern parts of Taiwan. Each division's responsibilities are detailed in the following chart:



Branch Offices	Activities	Areas
I	<ol style="list-style-type: none"> 1. The quarantine of inbound and outbound vessels, crew and passengers, and aquatic products. 2. The management of hygiene in the harbor areas. 	Keelung Harbor, Su-ao Harbor, Taipei Ba-li Harbor, Chu-wei Taoyuan and Sheng-ao Rey-fang Harbors of the China Petroleum Company, and the wharf of the fourth nuclear power plant of the Taiwan Power Company in Kung-liao in the Taipei County, etc.
II	<ol style="list-style-type: none"> 1. The quarantine of aircrafts and passengers and crew on board. 2. The control, education, and prevention of infectious diseases. 3. The quarantine of imported aquatic products and corneas 4. Laboratory tests, control of vectors in the airport areas. 5. Related administrative matters. 	
III	<ol style="list-style-type: none"> 1. Education, laboratory testing, surveillance, supporting local governments, and other operations related to the control and prevention of infectious diseases. 2. The quarantine and examination of disease in the harbor areas. 	Changhua County, Miaoli County, Nantou County, Taichung City, Taichung County, Yunlin County, Mai-liao Harbor, and Taichung Harbor.
IV	<ol style="list-style-type: none"> 1. The education, laboratory testing, surveillance, supporting local governments, and other operations related to the control and prevention of infectious diseases. 2. The quarantine and examination of diseases in harbor areas 	Chiayi City, Chiayi County, Kaohsiung City, Kaohsiung County, Penghu County, Pingtung County, Tainan City, Tainan County, An-pin Harbor, Kaohsiung Harbor, Makung Harbor, and Yun-an Harbor.
V	<ol style="list-style-type: none"> 1. The education, vaccination, and the quarantine of crew, passengers, and aquatic products. 2. Environment sanitation and the control of vector insects and rodents. 	
VI	Disease prevention and quarantine of harbor areas and vessels, and laboratory testing.	Hualien County, Taitung County, Ho-ping Harbor and Hualien Harbor.

Mission:

A. Branch Offices III, IV, and VI: Disease prevention operations

1. To establish regional stationary reporting systems for infectious diseases.
2. To conduct disease surveillance.
3. To investigate and manage epidemics.
4. To store and manage drugs and devices used for disease prevention and to distribute drugs used for the prevention of malaria.
5. To carry out examinations of human biological specimens for medical surveillance.



▲ *Mouse elimination work.*



▲ *Fishery products quarantine.*

B. Branch Offices I to VI: Quarantine operations

1. Quarantine inbound and outbound aircraft, vessels, and crew; quarantine of vessels includes review documents and on-board inspection.
2. Quarantine of aquatic products, vaccination against various infectious diseases, issue of international vaccination certificates, and issue of certificates of mouse elimination.
3. Management of hygiene in harbor areas, including the control of mice, arthropods, surveillance of plaque-causing bacteria (*Yersinia pestis*), surveying of mouse shields on the vessels in harbors, and eradication of mice in harbor areas in accordance with annual "mouse elimination week".
4. Quarantine examination, including the examinations of vessels, aircraft, food, drinking water, and specimens of imported aquatic products.
5. Examination of environmental samples in the harbor areas.



Information Technology Team

Vision:

Apply IT to planning and establishing disease prevention systems, building a modern epidemic prevention data system to manage public health information, and using Internet and telecommunication technology to speed up the exchange of epidemic prevention data, in order to improve the efficiency and management of epidemic reporting.



▲ Data warehousing.

Mission:

1. Use information and telecommunication technology to increase channels for collecting epidemic prevention data.
2. Establish a mobile surveillance system for epidemics and make connections with global epidemic prevention information.
3. Integrate each epidemic prevention system to build long-term data storage space for epidemic prevention.
4. Apply information technology to establish an epidemic prevention network and improve the office automation environment.
5. Improve recognition of information technology and strengthen the professional skills of IT personnel in CDC.



▲ Data warehousing.



Prospects

1. Private sector resources will be consolidated and full public participation in disease control encouraged.
2. Professionals in disease control will be developed to upgrade the professional proficiency of disease control. The scientific method will be applied to disease control.



3. A sound and complete network will be established for disease surveillance to facilitate the control of disease .
4. Efforts will be made to actively collect domestic and international information for the prompt and effective management of disease. Flexibility will be maintained in disease control.
5. Disease recognizes no boundary, and health is a basic human right. Efforts will be made to strengthen cooperation with other countries, to participate in international disease control activities, and to join international health organizations such as the World Health Organization for collaboration in disease control.
6. More immunizations will be made available, and immunization coverage improved to promote national health and prevent infection by communicable disease.
7. New technology in disease control will be brought in for disease surveillance for the prevention of emerging communicable diseases. Reporting rates of both notifiable and reportable disease will be increased to over 80%.

