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2011 Taiwan Public Health Report

Department of Health R.O.C. (Taiwan)

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Message from the Minister of Health

The ROC's Department of Health (DOH) has a broad range of duties, including responsibility for public health, health promotion, disease-prevention monitoring, food safety, drug administration, medical care, National Health Insurance, care for the disadvantaged, biotech research and development, and international health affairs. Each of these areas plays a key role in the people's health, and every important DOH policy is made with an overarching concern for citizens' well-being. The Department seeks to raise health care quality while increasing the efficiency of the health system, balancing the distribution of medical resources and caring for the disadvantaged to promote and protect the people's welfare.

Every year the DOH publishes an annual report to discuss progress by the Republic of China's health agencies. This report details Taiwan's public health situation, government policies and DOH results in 2010 and the first half of 2011.

Flu cases peaked around Chinese New Year in 2011. To control the epidemic, the DOH launched a flu-shot campaign and permitted the sale of Tamiflu pills. Flu outpatient clinics were set up at hospitals, separating patients to reduce contagion, and the epidemic was brought under control.

To protect consumer health, the DOH established Taiwan's Food and Drug Administration (TFDA) in January 2010 to oversee food, drug and cosmetic safety. In May 2011, a diligent government product safety chemist discovered that plasticizers were tainting many consumer products due to illegally adulterated clouding agents. This crisis provided Taiwan with an opportunity to gain greater understanding about the importance of managing food safety and risks. Let us hope that the incident will prompt Taiwan's food industry to reinvent itself so as to bolster its international competitiveness

The National Health Insurance program is the pride and joy of the Taiwanese people. Consistently earning high evaluations from the international community, it offers convenient access to high-quality medical care. To put health care financing on a stable footing, the government raised the national health insurance premium rate from 4.55% to 5.17%. To promote the program's sustainable development. President Ma Ying-jeou launched “second-generation” National Health Insurance with amendments to the National Health Insurance Act on January 26, 2011. These amendments include changes in how premiums are calculated, steps to strengthen the government's financial responsibility and efficiency, establishment of a mechanism for pegging expenditures to revenues, elimination of coverage for inappropriate medical treatments, and measures to bring greater transparency. These reforms help National Health Insurance sustainably improve care for the people of Taiwan.

After 2008 survey of the nutritional and health status of ROC citizens revealed that 44.1% of adults were overweight, the DOH launched a "Health 100" campaign aiming to get the people of Taiwan to collectively lose 600 metric tons. Efforts were made to encourage people to exercise in groups, using the power of mutual support to bring people together to "eat intelligently, exercise happily and check one's weight daily."

Health care is a high-value industry in Taiwan, with prices that are very competitive internationally. Health care standards in Taiwan are among the highest in Asia. The DOH has promoted internationalization of Taiwan's health services to realize its goal of "inviting patients in" via medical tourism and "delivering health care outwards" by exporting services, ideas and technologies. These efforts have increased the international visibility of Taiwan's health-related industries.

For three years running, Taiwan has been invited to participate with observer status at the World Health Assembly that determines World Health Organization (WHO) programs and policies. Furthermore, the ROC has continued to participate in a number of WHO conferences of a technical nature. Thanks to the efforts and support of Taiwan's international friends and allies, the international community has gradually come to understand the necessity of ROC participation in international health bodies, and has begun to openly support our participation, allowing Taiwan to expand its roles as a responsible member of the international community.

There is a growing elderly and disabled population in Taiwan. In order to build a robust and comprehensive long-term care network that provides the public with high-quality and accessible services, the DOH drafted the Long-Term Care Services Act, which was presented to the Legislative Yuan for review in May 2011. Another dramatic change to the population structure of Taiwan is the plummeting number of children. In the face of these demographic challenges, and in conjunction with general government restructuring efforts, we are integrating various health and social welfare resources under a new Ministry of Health and Welfare to establish a unified health care and social welfare system oriented toward holistic care.

While facing all of these issues over the last year and a half, the Department of Health has welcomed and received feedback from every quarter of society. We deeply understand the importance of self-examination in order to improve. Only by so doing can we keep abreast of the times and meet society's expectations. By carrying out our duties as best we can and implementing needed reforms, we hope to usher in a new era of optimal health for all of Taiwan's people.

Minister of Health

Wen-Ta Chiu

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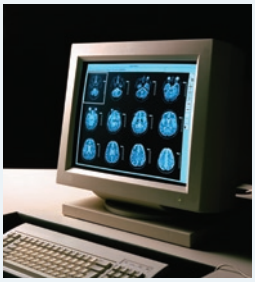
Health care for all 100



I Health Policies

The responsibilities of the Department of Health, the Executive Yuan (hereafter referred to as the DOH) are very closely related to the daily health and welfare of the public. The DOH promotes medical care, disease prevention, health promotion, research and development in biotechnology, management of health industries, the National Health Insurance, and international health affairs, as well as food, drug, and cosmetic management and health insurance affairs. With limited resources and organization, how to provide the people with all-directional health care services to protect the health of all is a major task of today.

Both the Constitution of the ROC and its amendments (specifically Article 10) guarantee the protection of public health. Although there is no clear stipulation about how these guarantees should be carried out, the DOH nevertheless has made it its mission to promote and protect public health and welfare, regarding the right to be healthy as basic human rights. The DOH endeavors to provide the people with a holistic healthcare system, so as to fulfill its vision of "quality, efficiency, balanced resources, and care for the disadvantaged." The DOH's mid-term administrative projects for 2010-2013, as well as the specific administrative goals for 2010 and 2011 have been established- "encouraging participation by all people, fulfilling lifestyle wellness", "implementing healthcare and disease prevention mechanisms to guard against the threat of illness", "refining the healthcare systems and safeguarding the rights of the disadvantaged to medical care", "strengthening food and drug regulations to protect the public health", "developing healthcare technology", "raising administrative efficiency", "improving the financial health of the national healthcare system" and "creating a high-quality institutional culture of learning so as to develop human resources". In order to develop a healthier Taiwan, the DOH aims at actively empowering medical services for all and promoting the health and well-being of the community.

Chapter 1. Administrative Goals and Highlights in 2010-2011

The Department has, in accordance with the 2010 and 2011 policy guidelines of the Executive Yuan, and in coordination with the mid-term work plans and the range of the approved budget, and focusing on the current social conditions and the future development needs of the Department itself, formulated program plans for the year 2010 and 2011. Their goals and focuses are as follows.

1. To encourage participation by all people to realize healthy lifestyle. The DOH took the following measures: creating healthy, supportive environments, improving understanding about community health building, and promoting preventive health care; constructing supportive smoke-free environments; strengthening cancer prevention and care quality; and constructing a friendly healthcare environment, maintaining the health of the public, enhancing chronic disease prevention and control efforts, and promoting vitality and healthy aging.
2. To strengthen health promotion and disease prevention preparedness and thus to guard against the threat of illness. To do so, the DOH has enforced various disease control and management measures, strengthened a variety of disease control actions and fortified indigenous disease control, carried out a plan to halve tuberculosis incidence in 10 years and by adopting the harm-reduction approach to HIV/AIDS control; actively promoted the National Vaccine Fund to increase vaccination rate. It built a robust communicable disease surveillance system and strengthened a collaborative model among different departments.
3. To refine the healthcare systems and safeguard the rights of the disadvantaged to medical care. The DOH set up a National Emergency Medical Service and Critical Care Network and a Community Healthcare Network, so as to promote

a balanced distribution of healthcare resources, strengthen healthcare systems, and create a patient-centered care environment; refined its hospital-evaluation system and continued to improve the quality of care; and built a sound long-term-care system for the disadvantaged and promoted efforts to enrich the public mental health and suicide prevention.

4. To strengthen food and drug regulations to protect public health, the DOH enhanced management and risk assessment of food, drugs, and cosmetics to boost the safety of and control over food and drugs, and strengthened collaboration among different government agencies; fashioned a medicinal product review and drug inspection system of international standards; established a joint taskforce to carry out illegal drug busts; built a safe consumption environment of Chinese medicine; and enforced drug regulations so as to effectively cut down drug abuse.
5. To develop healthcare technology, the DOH carried out research on health technology, public health and safety, and the impacts of social, economic, and environmental factors on public health, as well as effective responses; enhanced emergency-response mechanisms and the emergency-response capabilities of government and the public; helped develop the domestic biotechnology industry; and promoted health-technology services.
6. To raise administrative efficiency, the DOH established drug-evaluation, food-safety risk-assessment models and related administrative principles that are in line with international norms; raised the efficiency and quality of food and drug-safety reviews; strengthened the professionalism of evaluation personnel; and integrated the functions of the Department's hospitals to streamline administration and promote information technology.
7. To improve the financing of the National Health Insurance, the DOH, in coordination with reforms that ushered in the second generation of the National Health Insurance, established complementary measures to ensure its sustainability and actively implemented austerity measures to cut deficits.
8. To create a high-quality institutional culture of learning so as to develop human resources, the DOH employed performance-management and strategic human resources management; strengthened professional development for health administrative staff so as to raise professional knowledge, management skills, and global

Figure 1-1 Organization of Health Administration

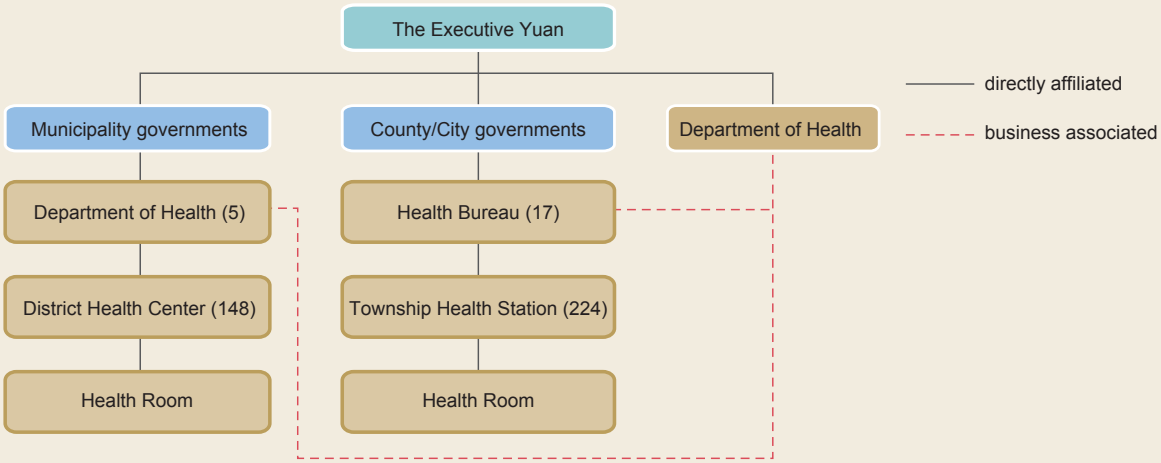
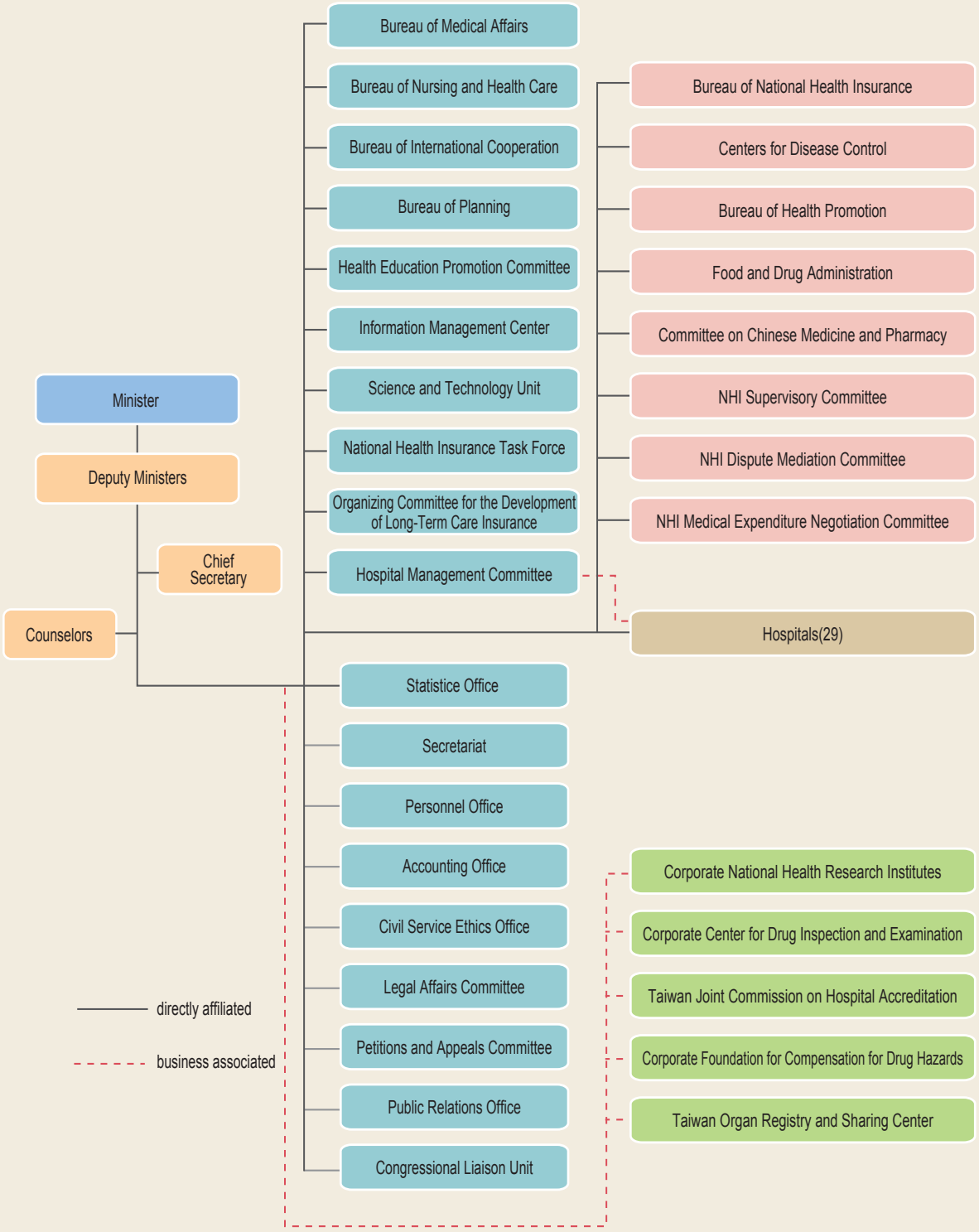


Figure 1-2 Organization of the Department of Health, the Executive Yuan



perspectives; and bolstered medical-staff training to raise professionalism.

Chapter 2. Health Organization

Organization of health administration came originally in three levels, the central, provincial, and county/city. Since the promulgation of the Local System Act in 1999, the health organization was reorganized into two levels, the central, and the municipality and county/city (Figure 1-1).

The Department of Health of the Executive Yuan at the central level is the highest health authority in Taiwan to be responsible for the health administration of the country, and also the technical assistance, supervision and coordination of local health agencies. Health administration at the local level includes health departments and bureaus, established by municipalities or county/city governments. After the creation of the five special municipalities on December 25, 2010, the number of these local departments or bureaus was reduced from 25 to 22.

Section 1, The National Health Administration

The Department of Health consists of four bureaus: the Bureau of Medical Affairs, the Bureau of Nursing and Health Care, the Bureau of International Cooperation, and the Bureau of Planning, plus several mission-driven agencies, such as the National Health Insurance Task Force, the Information Management Center, the Science and Technology Unit, the Health Education Promotion Committee, the Long-Term-Care Insurance Preparatory Task Force, and the Hospital Management Committee. The affiliated organizations under the Department include the Bureau of National Health Insurance, Center for Disease Control, Bureau of Health Promotion, Food and Drug Administration, Committee on Chinese Medicine and Pharmacy, NHI Supervisory Committee, NHI Dispute Mediation Committee, NHI Medical Expenditure Negotiation Committee, 29 DOH hospitals (including six sanatoriums and one chest hospital). In addition, the DOH also financially supports units such as the Corporate National Health Research Institutes, Corporate Center for Drug Inspection and Examination, Taiwan Joint Commission on Hospital Accreditation, Corporate Foundation for Compensation for Drug Hazards, and the Taiwan Organ Registry and Sharing Center (Figure 1-2).

Section 2, Ministry of Health and Welfare

In the face of globalization, every country is striving to raise its national competitiveness through organizational re-engineering to improve government efficiency while upholding the principles of “lean, flexible and efficient” government administration.

Facing the impact of population transition due to aging society, low birth rate, and immigration, Taiwan has to quickly integrate its medical-care and social-welfare services and other work related to the following: long-term care, senior-citizen medical care and welfare, child welfare, women's rights, and social insurance and assistance. The government needs to distribute its resources more efficiently and engage in well-considered policymaking so as to prepare for the future.

In order to integrate health and welfare resources, a new Ministry of Health and Welfare will be created by merging the Department of Health and the Ministry of the Interior's Department of Social Affairs, Children's Bureau, National Pension Supervisory Commission, and Domestic Violence and Sexual Assault Prevention Committee. The new ministry will be charged with planning and assessing public policies connected to public health, medical care, and social welfare services and programs, with the overarching aim of constructing a comprehensive public-health and social-welfare system oriented toward holistic care.

Chapter 3. Health Budget

In 2011, the total health budget was registered at NT$69 billion, accounting for 3.9% of the total central government budget of NT$1,769.8 billion. See Figure 1-3.

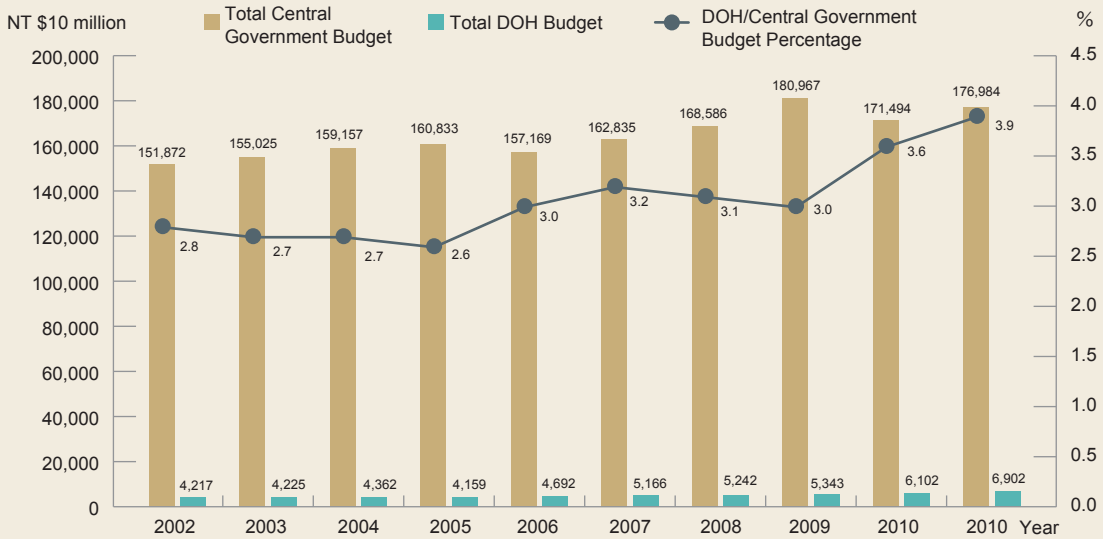
The DOH has continued to work toward its ideals of promoting and protecting the health and welfare of all citizens despite budget limitations, and the health teams have continued to make all efforts to bring health and safety to the people. In a public opinion survey in 2010, the approval rate of the performance of the health policy was as high as 70%.

Chapter 4. Performance Evaluation

The promotion of health and medical care requires the concerted cooperation of the central and the local governments to effectively enforce the relevant policies, and thus to protect the health of the people. The overall evaluation of the Department over the achievements of local health departments/ bureaus aims primarily at evaluating the annual performances of local health organizations with a view to help them improve quality of services to the public.

In response to the restruction of the DOH, beginning in 2010 the original evaluation items were merged and streamlined from nine categories (medical administration, long-term care, pharmaceutical administration, controlled substances, food, laboratory testing, diseases control, healthcare and health education) into six (medical administration, long-term care, food and drugs, disease control, healthcare, and health education). Supervising agencies of the local health centers are put in charge of handling follow-up incentive arrangements after evaluation, in hopes of inspiring administrative efficiency and service quality.

Figure 1-3 DOH Budget as Percentage of Total Central Government Budget, 2002-2011



II Health Indicators

Along with increase in national incomes, improvement in living environment and national nutrition, advancement in health and medical sciences, upgrading in health standards, and increase in accessibility to medical care due to the implementation of the National Health Insurance, the average life expectancy of the people has prolonged.

Chapter 1. The Population

At the end of 2010, the total registered population in Taiwan was 23.16 millions. Of them, 11.64 millions were males and 11.53 millions were females; giving a sex ratio [male population/female population × 100] of 101. The annual growth rate of population was 1.83 ‰.

At the end of 2010, the population density in Taiwan was 640 persons per square kilometer of land area. By county and city, Kaohsiung City had the highest density, and Taipei City came next. Hualien and Taitung counties had the lowest density.

Section 1. Age Structure

The population of Taiwan reached 20 millions at the end of 1989. Upon the impact of the declining birth rate year by year, the age structure of population at the end of 2010 was already a shrinking pyramid of low birth rate and low death rate. See figure 2-1.

By the age structure of population, the proportion of the aged population above 65 years to the total population reached 7% in 1993, making Taiwan an aged society. The proportion of the 0-14 young age groups had declined from 21.1% in 2000 to 15.7% in 2010. In the same period, the proportion of the 65 years and above elderly population had increased from 8.6% to 10.7%. The aging of population is becoming more significant. (see figure 2-2 and table 2-1)

The dependency ratio [(0-4 population + 65 above population)/15-64 population × 100] had declined from 42.3% in 2000 to 35.9% in 2010, due primarily to the rapid decline of the young dependency ratio [0-14 population/15-

Figure 2-1 The 2010 Population Pyramid

64 population × 100] and the steady increase of the elderly dependency ratio [65 above population / 15-64 population x 100].

Section 2. Birth and Deaths

Fertility in Taiwan has declined year by year. Crude birth rate (total number of live births in the year / mid-year population x 1,000) had declined from 13.8 ‰ in 2000 to 7.2 ‰ in 2010, a historically low point. Crude death rate [total number of deaths in the year / mid-year population × 1,000] had increased slightly from 5.7 ‰ in 2000 to 6.3 ‰ in 2010, resulting in the decline of the natural increase rate of population [crude birth rate – crude death rate] to 0.9 ‰ in 2010. See Figure 2-3.

Section 3. Life Expectancy

Life expectancy at birth for both sexes in the last ten years had increased from 76.5 years in 2000 to 79.0 years in 2010, an increase of 2.5 years. For males in the same period, the life expectancy at birth had increased from 73.8 years to 76.2 years, an increase of 2.4 years. For females, it had increased from 79.6 years to 82.7 years, an increase of 3.1 years. The increase in the life expectancy at birth for females is higher than that of the males (See Figure 2-4.)

Table 2-1 Age Structure and Child/Elderly Dependency Percentage Breakdown over the Years

Year	Total population	Population structure			Dependency Ratio	
		Under 15	Between 15~64	above 65	Young–Age Population Dependency Ratio	Elderly population Dependency Ratio
	per 1,000 people	%	%	%	%	%
1980	17,805	32.09	63.63	4.28	50.44	6.73
1990	20,353	27.07	66.72	6.21	40.57	9.31
2000	22,277	21.11	70.26	8.62	30.05	12.27
2010	23,162	15.65	73.61	10.74	21.26	14.59

Figure 2-2 Shifts and Trends in Taiwan's Age Structure and Child/Elderly Support over the Years

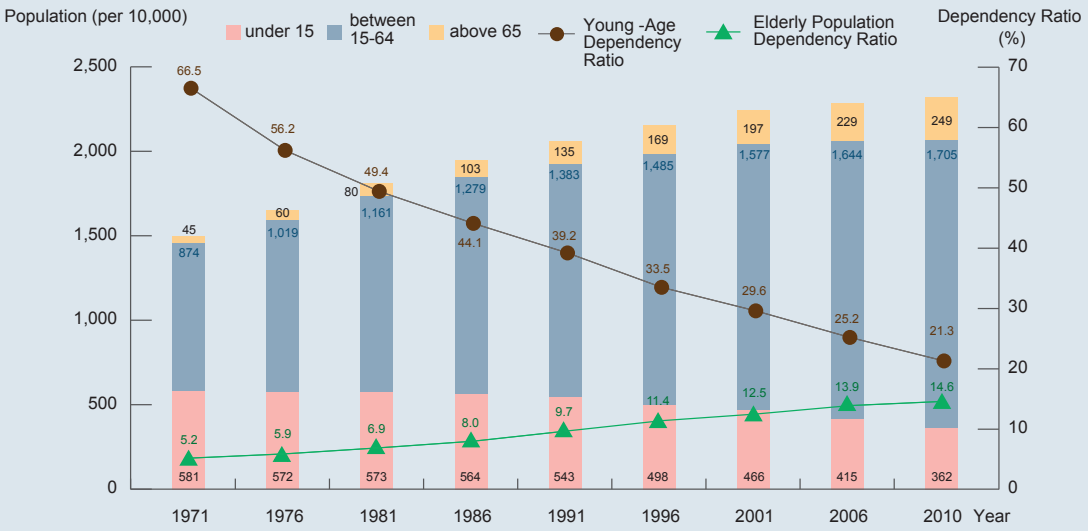


Figure 2-3 Crude birth rates, crude death rates, and nature increase rate of population by year

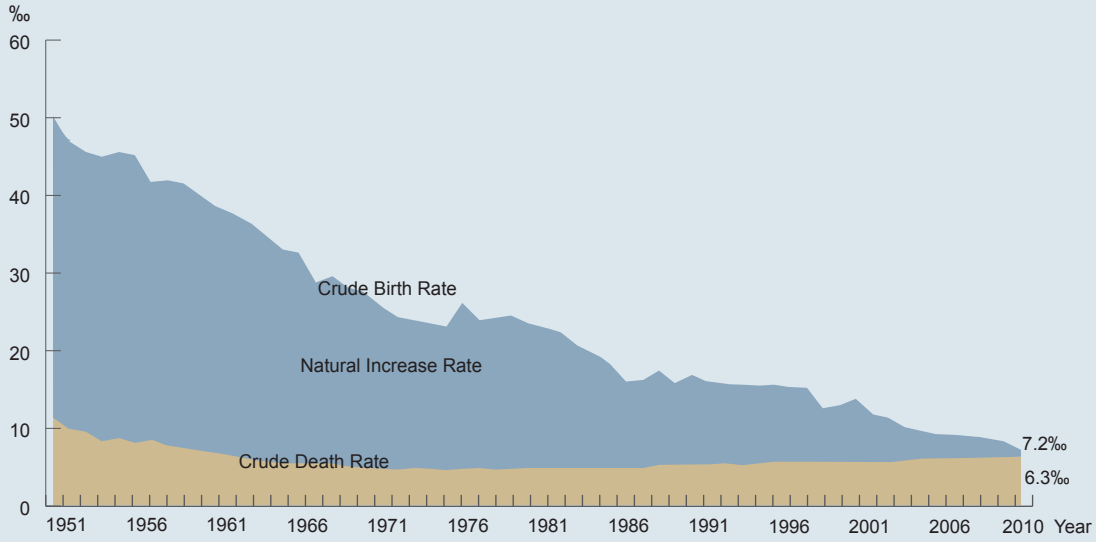
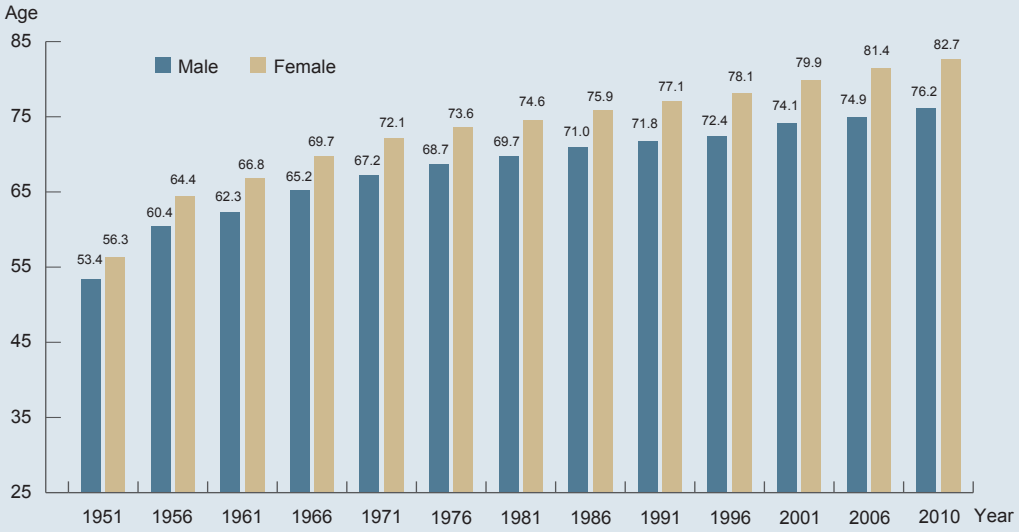


Figure 2-4 Life Expectancy at Birth



Chapter 2. Vital Indicators

Section 1. Ten Leading Causes of Death

In 1952, the leading causes of death were acute and communicable diseases; nowadays, the leading causes of mortality were chronic diseases, such as malignant tumors and cardiovascular illnesses, and accidents.

In 2010, the total number of deaths was 144,709 persons, giving a crude death rate of 625.3 per 100,000 populations, and was an increase of 1.5% over the previous year. If adjustment is made by the age structure of the 2000 world standard population, the standardized death rate of 2010 is 455.6 per 100,000, a decrease of 2.4 % over the previous

year. Changes in death rates seem to be significantly affected by the aging of the age structure.

In 2010, the causes of death were coded by the ICD-10. The ten leading causes of death were malignant neoplasms, heart diseases, cerebrovascular diseases, pneumonia, diabetes, accidents and adverse effects, chronic diseases of lower respiratory tract, chronic liver diseases and cirrhosis, hypertensive diseases, and nephritis, nephrotic syndromes and nephrosis. For the first time since 1997, suicide had dropped from the top-ten list. Hypertensive diseases, meanwhile, moved up two notches from eleventh in 2009 to ninth in 2010. Otherwise, the rankings were unchanged. See Figure 2-5.

Section 2. Ten Leading Causes of Cancer Death

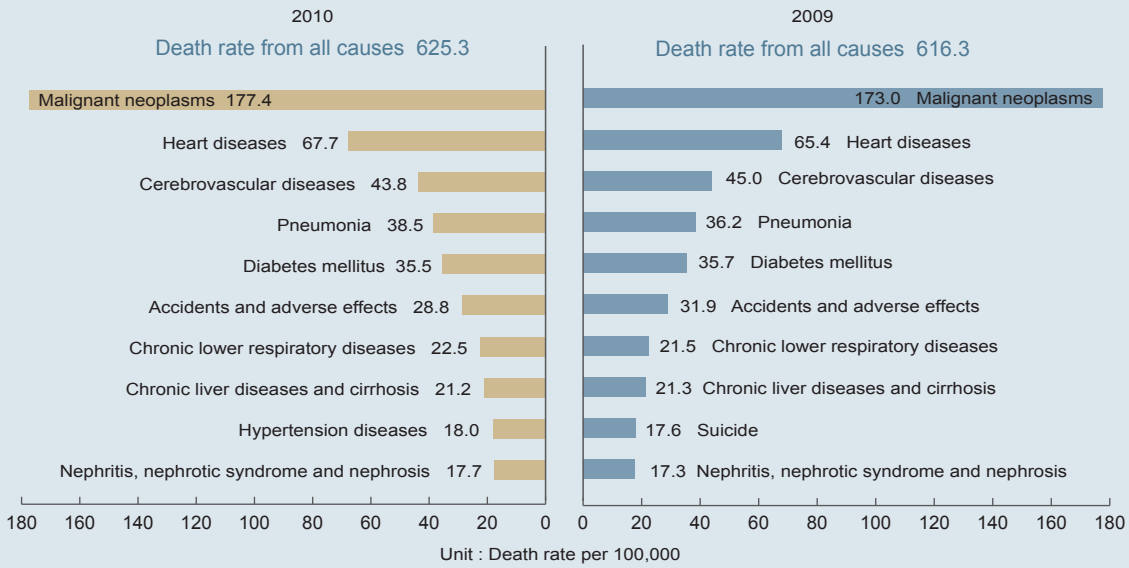
In 2010, the number of cancer deaths was figured at 41,046. The crude death rate was 177.4 per population of 100,000, registering an increase of 2.5% compared to that in the previous year. If adjusted and calculated on the basis of the 2000 standardized world population age structure, the standardized mortality rate was 131.6 – a slight decrease of 0.7% compared to that in the previous year. These statistics indicate that mortality rate in Taiwan has also been deeply affected by an aging population.

The ten leading cancer deaths in 2010 were: (1) lung cancer, (2) liver cancer, (3) colon and rectum cancer, (4) female breast cancer, (5) oral cavity cancer, (6) stomach cancer, (7) prostate cancer, (8) oesophagus cancer, (9) pancreas cancer, and (10) cervical cancer. The fifth- and sixth-ranked items swapped places from 2009 to 2010. Otherwise, the list remained the same. See Figure 2-6.

Section 3. Neonatal, Infant and Maternal Mortality Rates

With the advancement in public health, both infant [deaths of infants under one year of age / number of live births of the year × 1,000] and neonatal [deaths of infants under four weeks of age / number of live births of the year × 1,000] mortality rates have, with the slight exceptional increase due to the practice of the new birth reporting system in 1995, generally declined. In 2010, neonatal mortality rate had declined to 2.6 ‰ ; this was about 38 %

Figure 2-5 Changes in Ten Leading Causes of Death



Note : All causes for 2009-2010 are coded by ICD-10.

Figure 2-6 Changes in Ten Leading Causes of Death by Cancer

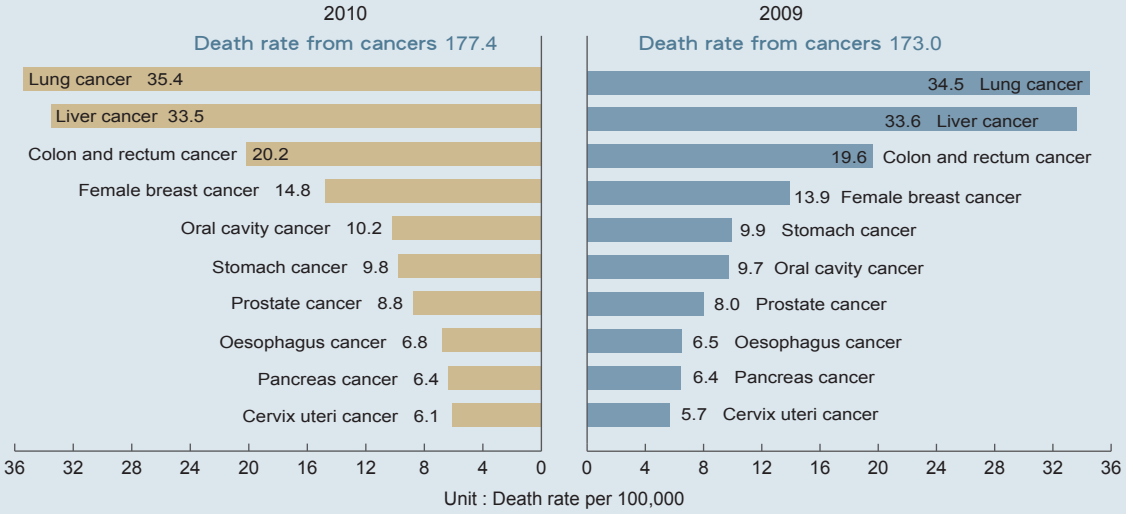
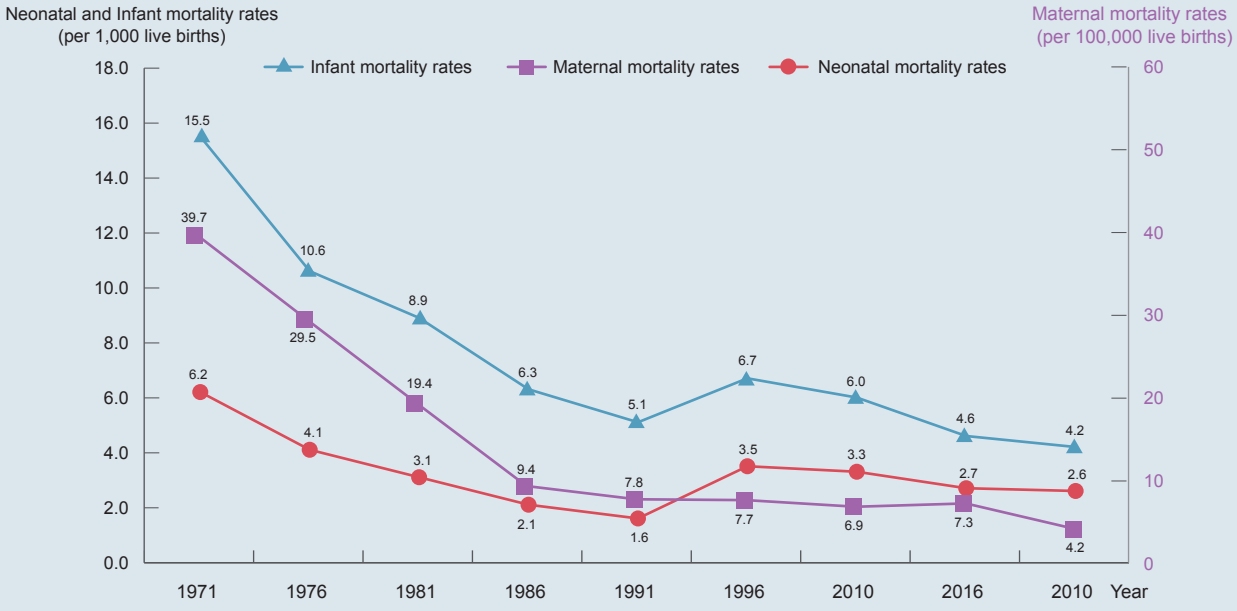


Figure 2-7 Neonatal, Infant and Maternal Mortality Rates



of the mortality rate in 1971. In the same period, infant mortality rate had dropped from 15.5 ‰ to 4.2 ‰. Furthermore, the maternal mortality rate had declined from 39.7 per 100,000 live births in 1971 to 4.2 in 2010 (Figure 2-7).

Chapter 3. National Health Expenditure

The total national health expenditure for 2009 was NT$ 859 billions. In the year the National Health

Insurance was launched in 1995, the proportion of national health expenditure to GDP of that year had increased from 4.9% in 1994 to 5.3% in 1995, and to 6.9 % in 2009. In the last ten some years, the average national health expenditure per capita had increased year by year from NT$ 10,765 in 1991 to NT$ 37,224 in 2009, an increase of 6.1% annually (Figure 2-8).

Chapter 4. International Comparisons

Section 1. Comparisons in the Rate of Natural Increase (RNI)

As indicated by the 2010 Population Reference Bureau, global populations in 2010 totaled up to 6 billion and 892 million. The world's population is currently projected to reach around nine billion and 485 million by 2050, at 38% in population growth rate. Though the rate of demographic transition in general is on the rise, populations in certain countries have registered negative growths, with continuously declining demographic transition rate. See Table 2-2.

The global fertility rate in 2010 (the average number of children that would be born to a woman over her lifetime) was 2.5 ‰ . Fertility rates in Asian countries listed below are less than half of that, indicating that Asia has become a low-fertility rate region. Worldwide birth rate now stands at 20 ‰, and death rate, 8 ‰ . Fertility rate in Germany dropped lower than mortality rate in that year. In general, demographic structures in developed countries around the world would trend towards low fertility and low mortality rate. See Table 2-2.

Section 2. Life Expectancy Comparisons

Life expectancies for male at birth in major countries were figured at over 75 of age: male in Japan, Australia and Canada had the longest life expectancy, at 79; life expectancy for male in Taiwan in 2008 was at 76, equaling Japanese male's average expectancy in the 1990's. In terms of variations in life expectancy between 1960 and 2000, the average life expectancy for Japanese male has increased 13 years over the span of 40 years, the highest among 11 countries. Male in Taiwan figured 12 years in life expectancy growth over the same period.

Figure 2-8 NHE/GDP Ratios and NHE per Capita by Year

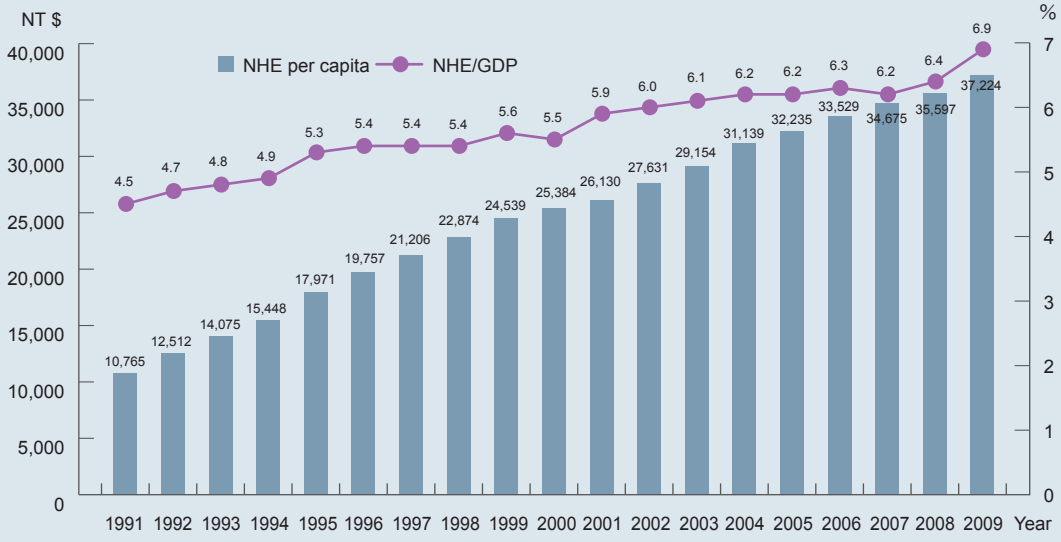


Table 2-2 Population Structures in Major Countries

	Midyear population (million)	Population projections (million)		2010-2050 Population growth / decline %	Total fertility rate	Birth rate ‰	Death rate ‰	RNI%
	2010	2025	2050					
Worldwide	6,892.0	8,108.0	9,485.0	1.4	2.5	20	8	1.2
Taiwan	23.2	23.9	21.5	0.9	1.0	8	6	0.2
Singapore	5.1	5.7	5.5	1.1	1.2	10	4	0.6
Japan	127.4	119.3	95.2	0.7	1.4	9	9	-0.0
Korea	48.9	49.1	42.3	0.9	1.2	9	5	0.4
Canada	34.1	39.7	48.4	1.4	1.7	11	7	0.4
US	309.6	351.4	422.6	1.4	2.0	14	8	0.6
UK	62.2	68.6	77.0	1.2	1.9	13	9	0.4
France	63.0	66.1	70.0	1.1	2.0	13	9	0.4
Germany	81.6	79.7	71.5	0.9	1.3	8	10	-0.2

Source: 2010 World Population Data Sheet, Population Reference Bureau

Table 2-3 Life Expectancies at Birth in Major Countries

	1960's	1970's	1980's	1990's	2000's	2005's	2008's	1960's	1970's	1980's	1990's	2000's	2005's	2008's
	Male							Female						
Taiwan	62	67	70	71	74	75	76	66	72	75	77	80	81	82
UK	68	69	70	73	76	77	78	74	75	76	79	80	81	82
US	67	67	70	72	74	75	76	73	75	77	79	80	80	81
France	67	68	70	73	75	77	78	74	76	78	81	83	84	85
Germany	67	67	70	72	75	76	77	72	74	76	78	81	82	83
Canada	68	67	72	74	77	…	79	74	76	79	81	82	83	83
Norway	71	71	72	73	76	78	78	76	77	79	80	81	83	83
Netherlands	72	71	73	74	76	77	78	75	77	79	81	81	82	82
Australia	68	67	71	74	77	79	79	74	74	78	80	82	83	84
New Zealand	69	68	70	72	76	78	78	74	75	76	78	81	82	83
Japan	65	69	73	76	78	79	79	70	75	79	82	85	86	86

Source: Information on 1960-2005 population records was taken from 2008 OECD Health Data; Information of 2008 was taken from WHOSIS 2010

In 2008, life expectancies for female at birth were well over 80 of age: female in Japan had the highest life expectancy, at 86; French female came in second, at 84, and Australian female ranked third, at 84. Life expectancy for female in Taiwan in 2008 was at 82, equaling Japanese female's average expectancy in the 1990's. In terms of variations in life expectancy between 1960 and 2000, the average life expectancy for Japanese female has increased 15 years over the span of 40 years, the highest among all countries. Female in Taiwan figured 14 years in life expectancy growth over the same period (see Table 2-3).

Section 3. Comparisons of National Health Expenditure between Different Countries

In Taiwan, the National Health Expenditure (NHE) per capita over the course of 2008 was recorded at US$1,129—much lower than the median NHE of US$3,545. Taiwan ranked the 29th among OECD countries. Only Hungary, Estonia, Poland, Chile, Mexico and Turkey had lower per capita expenditure. GDP per capita in Taiwan was US$17,399 - lower

Table 2-4 Comparisons of NHE per capita v.s. GDP per capita between Taiwan and OECD Member Countries, 2008

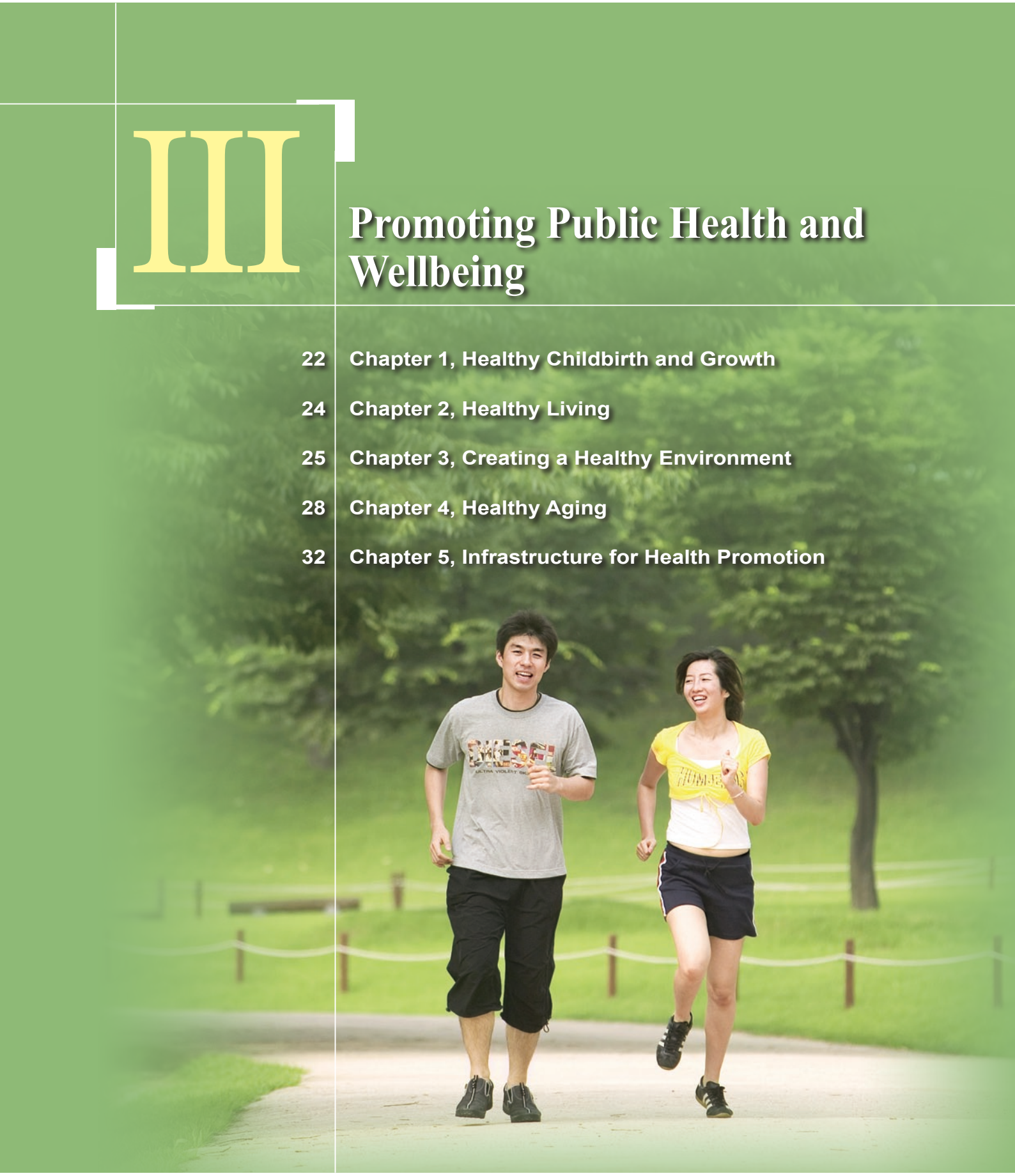
Unit：US$

Rank	Nation-ranked by NHE per Capita	NHE/GDP(%)	NHE per capita	GDP per capita
Median		8.7	3,545	39,170
1	Norway	8.5	8,075	94,568
2	United States	16.0	7,538	47,193
3	Switzerland	10.7	7,037	65,600
4	Denmark[2007]	9.7	5,550	56,974
5	Ireland	8.7	5,500	62,918
6	Netherlands	9.9	5,274	53,466
7	Austria	10.5	5,215	49,743
8	France	11.2	4,996	44,785
9	Belgium	10.2	4,932	48,197
10	Luxembourg[2006]	7.3	4,929	67,521
11	Sweden	9.4	4,879	51,937
12	Iceland	9.1	4,777	52,608
13	Germany	10.5	4,714	44,700
14	Canada	10.4	4,691	45,185
15	Finland	8.4	4,282	51,038
16	Australia[2007]	8.5	3,975	46,734
17	United Kingdom	8.7	3,838	44,320
18	Italy	9.1	3,545	39,170
19	Spain	9.0	3,240	36,125
20	New Zealand	9.8	2,953	29,980
21	Japan[2007]	8.1	2,781	34,284
22	Greece[2007]	9.7	2,679	27,713
23	Slovenia	8.3	2,257	27,101
24	Israel	7.8	2,222	28,645
25	Portugal[2006]	9.9	1,823	18,358
26	Czech Republic	7.1	1,498	21,059
27	Slovak Republic	7.8	1,374	17,555
28	Korea	6.5	1,245	19,115
29	Taiwan	6.4	1,129	17,399
30	Hungary	7.3	1,119	15,368
31	Estonia	6.1	1,073	17,539
32	Poland	7.0	972	13,856
33	Chile	6.9	697	10,167
34	Mexico	5.9	599	10,184
35	Turkey[2007]	6.0	530	8,780

Source: 1.OECD Health Data 2010
2.Office of Statistics, Department of Health.

than the median GDP of US$39,170, and ranked the 30th among OECD member countries – higher than Hungary, Poland, Mexico, Chile and Turkey. Overall, higher GDP per capita always results in higher NHE per capita. In 2008, NHE in Taiwan accounted for 6.4% in the GDP – it was 2.3 percent lower than the global median. Compared with other OECD member countries, Taiwan's NHE/GDP percentage was relatively low (see Table 2-4).

III Promoting Public Health and Wellbeing



In order to achieve "Health for All" as advocated by the World Health Organization (WHO), the DOH drew up policies to promote the health of pregnant women, infants and toddlers, children, teenagers, middle-aged and senior citizens, and women in general. In addition, facing the challenges brought on by a number of unhealthy lifestyle habits, the DOH also drew up policies related to cancer, tobacco hazards, and chronic-disease prevention. Bearing in mind the current state of society and likely future trends, the DOH, as part of its ongoing efforts to improve the people's health, also planned and revised its policy goals and strategies based on research and empirical data gleaned from its health surveillance surveys. Furthermore, the DOH also devoted itself to issues connected to human rights, such as tobacco-hazard prevention and control, the safeguarding of fetal rights, the building of community health, cancer prevention and control, reproductive healthcare, oral health care for the disabled, reduction in the rates of stillbirths and infant mortality, pediatric care, women's healthcare, and healthy aging.

Chapter 1. Healthy Childbirth and Growth

To promote healthy growth and development for infants, toddlers and children, the DOH actively pushes for health promotion initiatives for expectant mothers, women in labor, infants, toddlers, children and teenagers. These initiatives help to detect abnormalities early so as to enable early intervention.

Section 1. Ensuring the Health of Pregnant Women and Women in Labor

1. Prenatal examinations

1) Pregnant women are offered ten prenatal care inspections at designated hospitals under the National Health Insurance coverage. In 2010, 90% of the offered free inspections were used, and 96.2% of expectant mothers took advantage of them at least once.
2) In 2010, the DOH started to subsidize pregnant women from low-income households for *Group B Streptococcus* screening. Starting in 2011, the recipients of the subsidies were expanded to include pregnant women from medium- and low-income households, as well as pregnant women in remote regions. The DOH provides a subsidy of NT$400 for each screening.

2. Special health issues

1) Since the promulgation of the Genetic Health Act on July 9, 1984, the DOH has been actively promoting such services as prenatal diagnosis of genetic diseases, newborn screenings, and genetic counseling. Subsidies or fee exemptions are provided for all of these services. Once an abnormality is detected, health education and prenatal care will be made available.
2) The draft amendment of the Genetic Health Act, which was sent to the Legislative Yuan for review on February 20, 2008, proposes renaming it the "Reproductive Health Act." The amended act includes preventive services for genetic diseases, mandates that medical facilities provide pregnant women with counseling services, and revised regulations concerning induced abortion. The Reproductive Health Act is currently under the process of being amended.

Section 2. Health Promotion for Infants, Toddlers, and Children

1. The DOH introduces newborn screening program for screening genetic metabolic disorders. 11 items of diseases are screened, Including: lucose-6-phosphate dehydrogenate deficiency (G6PD), etc. For those newborns with atypical results, follow-ups, referrals, diagnosis confirmations and appropriate treatments will be given.
2. Developmental screening surveillance, preventive health care programs for children and Joint Development Assessment are available:
   1) The DOH subsidizes medical care institutions in providing preventive healthcare services for children under seven for early detection and intervention. In 2010, 98.3% of infants under 12 months of age received at least one preventive healthcare service. In 2010, the DOH pushed the "New Preventive Healthcare Program for Children" to strengthen developmental screening and provide diverse services, referrals and diagnosis confirmation reports.
   2) Aiming to provide timely team assessments and interventions on behalf of children for whom there are concerns about possible developmental delays, the DOH has established one to four early developmental assessment centers in each county and municipality throughout Taiwan. Currently there are a total of 42 such centers. From 2010 to September of 2011, these centers served 19,134 children about whom there were concerns about possible developmental delays.
3. "Breastfeeding in Public Places Act" promulgated on November 24, 2010. Through the DOH's "Baby-Friendly Hospital Initiative（BFHI）Accreditation Program," a total of 144 hospitals and clinics were certified in The rate of mothers who were exclusively breastfeeding at one month after delivery rose from 54.3% in 2008 to 58.5% in 2010. The rate of mothers who were exclusively breastfeeding at one month after delivery rose from 54.3% in 2008 to 58.5% in 2010.

Section 3. Health Care for Adolescents

1. The DOH has established a website, the Secret Garden (www.young.gov.tw), to provide sex education and information on contraception, as well as video-conferencing consultations about adolescent reproductive health.
2. The DOH's "Adolescent Reproductive Health Promotion Service Center Program" is a counseling platform that makes use of blogs and phones. Referrals are given to teens in need of treatment or individual consultations.
3. The DOH has established programs for adolescent-friendly outpatient medical services in 30 hospitals and clinics, so as to provide teens with preventive care and reproductive health services.

Section 4. Vision Health

1. The DOH carries out preschool vision screenings for strabismus, amblyopia, and myopia for four- and five-year-old preschoolers. 361,720 preschoolers underwent the screening in 2010. Children were found to be visually impaired. Over 98% of the abnormal cases so designated have been referred for follow-up care.
2. In both 2010 and 2011, the DOH conducted surveys to investigate the prevalence and causes of myopia and other issues related to the eyesight of preschoolers.

Section 5. Hearing Care

1. The DOH conducted the "Newborn Hearing Screening Program" and an evaluation to determine the program's effectiveness and efficiency. The number of medical care institutions participating in the newborn hearing screen had increased from 163 (accounting for 28.70%) in 2007 to 243 (accounting for 60.45%) in 2010
2. The DOH conducted preschool hearing screenings in communities and nursery schools. In 2010, a total of 167,120 preschoolers received screenings and 99.01% of those screened

received follow-up check-ups. The program served 86.64% of preschool-aged children in Taiwan in 2010.

3. The DOH made it a priority to subsidize hearing screenings for newborn infants. Since 2010, the DOH has provided a subsidy of NT$500 for each screening of an infant less than three months of age from a low-income household.

Section 6. Oral Cavity Care

1. The DOH has promoted the use of fluoride to prevent dental caries. Each year, the DOH offers twice dental fluoride applications, checkups, and oral health education programs to children under five. From the beginning of 2010 to June 2011, 424,154 such services were provided. The DOH also provided 1,520,000 school children in 2,661 primary schools around the nation with a weekly fluoride mouth rinse.
2. To protect the molars of disadvantaged children from tooth decay, from the beginning of 2010 to June 2011, the DOH applied dental sealants to the teeth of 6,575 school children (first- and second-graders in aboriginal regions and first-graders from low-income households in non-aboriginal regions).
3. The DOH established a model of oral care for gum-disease patients, and it trained seed teachers, volunteers and public health nurses to promote information about oral hygiene and proper tooth cleaning. In 2010, the DOH trained 100 seed teachers and held seven camps that attracted 400 attendees from diabetes clubs. In 2011, the DOH trained 70 seed teachers and held 20 community promotions, which attracted 600 participants.

Chapter 2. Healthy Living

In 2009, the new amendments to the Tobacco Hazards Prevention Act were put into effect, and the Tobacco Health and Welfare Surcharge on tobacco products was increased. According to a telephone survey about adult smoking behavior conducted from 2008 to 2010, male and female smokers over 18 years of age declined from 38.6% and 4.8% to 35.0% and 4.1%.

Section 1. A Tobacco-Free Lifestyle

1. Implementation of the New Regulations in the Tobacco Hazards Prevention Act

1) According to a survey conducted in 2010, the adult smoking rate in Taiwan dropped from 21.9% in 2008 to 19.8% in 2010, and the second-hand smoke exposure rate in smoke-free public places dropped from 23.7% in 2008 to 9.1% in 2010. These survey findings show that the adult smoking rate and the second-hand smoke exposure rate in smoke-free public places in Taiwan both went down.

2) To firmly enforce the Tobacco Hazards Prevention Act, from January 2010 to June 2011, 5,360,000 inspections at over 570,000 sites were conducted, and penalties were given for 12,884 violations. The DOH also performed random testing of tar and nicotine yields in tobacco products a total of 81 items.

2. Educational Campaigns and Supporting Tobacco-Free Environment

1) The DOH has partnered with the National Communications Commission (NCC) to insert anti-smoking warnings in cartoons with smoking scenes. The two agencies have also conducted research on the possibility of imposing a rating system to ban smoking scenes from TV cartoon programming aiming at preschoolers.

2) The DOH invited popular singers, Jolin Tsai and Jay Chou, to be spokespersons for its anti-smoking campaigns. 2010 “Quit and Win” campaign, in accordance with the theme of the World No Tobacco Day in 2010, brought attention to how tobacco companies market their products toward women and girls.

3) To create a smoke-free supportive environment, the DOH, funded colleges and sponsored camps to promote smoke-free college campuses, conducted its smoke-free program in 126 communities, assisted 53 hospitals to join the Global Network for

Tobacco Free Healthcare Services, and partnered with the Ministry of National Defense to advocate a smoke-free military.

3. Multiple Smoking Cessation Services

1) The DOH developed smoking-cessation networks on school campuses, army bases, workplaces, hospitals and clinics. In 2010, the DOH trained 27,450 healthcare workers to help smokers quit. The number is 64 times of that of 2009 and 2.8 times the total of all previous years. In 2010, 737,691 smokers signed up to receive cessation assistance. In 2011, DOH telephoned smokers via its smoking-cessation hotlines to track their progress.
2) The DOH launched the outpatient smoking cessation program in 2002. By June 2011, a total of 1,890 hospitals and clinics, covering 96% of the nation's townships and cities, had been contracted to offer this service.
3) The DOH launched a toll-free helpline to provide telephone coaching services to help smokers quit tobacco in 2003. As of June 2011, the helpline had received 560,000 calls. Between 2010 and June 2011, the helpline received nearly 140,000 calls. The six-month quit rate was over 30%.
4) The DOH assisted hospitals and clinics to offer smoking cessation classes and partnered with the Ministry of Justice to conduct a tobacco control program in correctional facilities to help inmates quit smoking.

Section 2. Safe Living

Over the past decade, when excluding deaths caused by major natural disasters, the accident mortality rate has been on the decline. In 1989, there were 70.2 accidental deaths per 10,000 persons; however, the rate had dropped to 28.8 per 10,000 persons in 2010. The DOH has taken several steps aiming at bringing this rate further down:

1. By cooperating with local health agencies, the DOH conducted household safety checks and offered improvement tips for disadvantaged

families with children under six years of age. From 2010 to June 2011, 18,653 households had received this service.
2. The DOH devised a pilot program to increase the involvement of pediatricians in working for accident prevention among children and adolescents. The program includes an accident checklist for infants and toddlers who are four years of age or under, and a health-education consultation sheet. The program aims to encourage pediatricians to deliver health education during outpatient visits so as to raise the accident prevention capabilities of caregivers.
3. The DOH continues to promote its program which aims at creating safe communities and schools. Meanwhile, it continues to help local communities and schools to be certified for the International Safe Communities and International Safe Schools programs from the WHO Collaborating Centre on Community Safety Promotion. By the end of June 2011, 18 communities and 44 schools in Taiwan had been certified.

Chapter 3. Creating a Healthy Environment

Based on the WHO's Jakarta Declaration of 1997, the DOH continued to promote its "Healthy Cities, Healthy Communities, Healthy Workplaces, Healthy Schools, and Healthy Hospitals" programs. By integrating resources from both the public and private sectors, the DOH was able to encourage public participation, cultivate greater understanding

about health issues, and construct a friendly supportive environment to create a healthy society.

Section 1. Healthy Cities

1. The DOH has set up a task force of professionals to offer assistance, while encouraging local administrations to initiate a regional Healthy City campaign. At present, 13 counties/cities have joined the Alliance of Healthy Cities Taiwan.
2. In order to promote exchange of information among cities, the DOH hosted the 2010 Taiwan Healthy Cities Conference and invited experts from overseas to come and share their knowledge and experience. Additionally, the DOH hosted the 2010 Nationwide Healthy Cities Workshop and the Second Annual Taiwan Healthy Cities Awards Competition Ceremonies. Finally, the DOH also published Healthy Cities in Taiwan and a booklet introducing the winning cities of the aforementioned competition.
3. At the end of June 2011, seven counties and cities and eleven regions in Taiwan had been permitted to join the WHO Alliance of Healthy Cities in the Western Pacific Region as non-governmental organizations.

Section 2. Healthy Communities

1. In 2010, 36 more communities received accreditation from the DOH's "Health Promotion Community Certification" program. Under the program, people are encouraged to eat five servings of fruit and vegetables per day and to exercise adequately. From 2008 to the end of 2010, a total of 84 communities were certified.
2. In 2011, under its "Building Healthy Communities" program, the DOH subsidized 16 local health agencies to work with communities (104 in all) in their jurisdictions to advocate the following: screening for four major cancers, health promotion for the elderly, tobacco control in adolescents, betel nut control (including related smoking cessation efforts), safety promotion, and healthy weight loss.
3. In 2011, the DOH subsidized 13 local health agencies to carry out community-based programs, promoting maintenance of a healthy weight, obesity prevention, physical activity and a healthy diet.

Section 3. Health Promoting Schools

To take care of the health of all students across the country, starting from 2004, the DOH joined forces with the Ministry of Education to promote the "Health Promoting School" program. During the 2011 academic year, 3,696 senior high schools, vocational high schools, junior high schools and elementary schools carried out the program.

Section 4. Healthy Workplaces

The promotion of healthy workplaces in Taiwan evolved from the nation's occupational-disease-prevention efforts. Since 2003, the DOH has worked with teams of experts to provide health promotion and tobacco-control counseling services and training, as well as to establish workplace service networks. Between 2007 and 2010, a total of 5,523 workplaces passed certification under the DOH's "Self-Accreditation of Healthy Workplaces" program. Currently, a total of 4,850 workplaces hold valid certification. Between 2006 and 2010, a total of 263 workplaces received acknowledgement of excellence. In 2010, the workplace smoking rate stood at 17.3%, down 0.9% from 2009.

Section 5. Health Promoting Hospitals

1. Active participation in the WHO's International Network of Health Promoting Hospitals

1) During the 18th International Conference on Health Promoting Hospitals and Health Services convened in the UK, the Director General of the Taiwan Bureau of Health Promotion was elected as the vice chair of the network's governance board. The Bureau was also honored to host the 20th international conference in April of 2012. This is the first HPH conference ever held in a location outside of Europe. What's more, the Bureau sponsored the 2010 International Conference on "Healthy Hospitals and a

Healthy Environment — Healthcare in the Climate Change Era," during which it urged healthcare providers in Taiwan to pledge to reduce their carbon footprints.

2) At the end of April 2011, 67 hospitals in Taiwan had been granted WHO certification, making the network of WHO-certified hospitals in Taiwan the fastest growing such network in the world. Furthermore, Taiwan's member hospitals have been actively publishing papers for the network's annual conference: The number of papers published by Taiwan's member hospitals ranked second highest in 2008 and 2009, and the highest in 2010.

2. Promoting Hospitals with Low Carbon Footprints

1) The Taskforce on HPH and Environment, led by the Director General of the Bureau of Health Promotion, is committed to assisting international healthcare providers conserving energy and reducing carbon emissions. Currently, 128 domestic hospitals (accounting for 64% of hospital beds in Taiwan) have answered to this call. It is estimated that the program will cut participants' carbon emissions by 13% (164,648 metric tons) by 2020, relative to the levels in 2007. That is equivalent to the positive environmental benefit of 445 Daan Forest Parks.

2) A manual entitled Green Hospital, Green Life, Green Planet—Experience Sharing on Green Hospitals was published as a reference work for hospitals and clinics on topics such as energy efficiency, green-building design, alternative energy, transportation, food, waste, water and environmental education.

Section 6. Obesity Prevention

Since 2011, the DOH has launched "Healthy Centenary, Healthy Taiwan" healthy weight management campaign. The campaign is being promoted by gathering 600,000 citizens from 22 counties/cities, and goal is set to lose 600 metric tons excessive weight. The campaign aims to promote an active lifestyle, to raise awareness about food calories and nutrition, to prevent chronic diseases, and to increase societal health, as well as the physical and mental health of individuals. President Ma Ying-Jeau made his public advocacy to "Healthy Centenary, Healthy Taiwan" in the President Weekly Journal, reminding our nationals of the importance of healthy diet and regular exercise. Furthermore, Premier Wu Den-yih led Taiwan's 22 counties/cities as well as central government agencies to officially launch the healthy weight management campaign. The core strategies of the campaign follow:

1. Promote drafting the "Population Nutrition Act" and build healthy cities and communities, as well as health-promoting hospitals, workplaces and schools.
2. Identify and improve the obesogenic environment; build a supportive information environment and provide healthy weight-management information through websites and telephone counseling hotlines (0800-367-100); and create a supportive environment for healthy eating and active living.
3. Assist hospitals and clinics to shift their focus from diagnoses and treatment to health promotion by establishing a prompting system. This service aims at reminding patients and the public about promoting good health, such as preventive health services and healthy-weight management which includes health-promoting healthcare information

in cancer screening reports; and promote baby-friendly hospitals and encourage breastfeeding.

4. Integrate cross-disciplinary and inter-departmental resources to conduct campaigns through holding conferences, releasing news to promote healthy weight loss and combating obesity in settings such as hospitals, schools, workplaces and communities.
5. Compile promotion materials and engage in public relations through multiple channels to increase public awareness about food calories, nutrition, physical activities and healthy-weight management; and improve literacy of healthy-weight management.

Chapter 4. Healthy Aging

Due to its low fertility rate and aging of the post-war baby boomers, Taiwan is expected to become an aged society in 2017. What's more, with the lifestyle of people in Taiwan becoming more sedentary and their diet more westernized, populations with chronic diseases are on the rise. To raise the quality of life of the nation's aging populations and slow the progression of chronic diseases, the DOH has promoted initiatives as age-friendly cities, age-friendly healthcare, and health promotion for the elderly, as well as prevention of chronic diseases and cancer.

Section 1. Health Policies for the Middle-Aged and Senior Citizens

1. In 2010, the DOH piloted its "Age-friendly Cities" initiative in Chiayi City, which applied to join the WHO's Global Network of Age-Friendly Cities on June 30, 2011. In 2011, eight more counties and cities took part. It is expected that by the end of 2012, over half of the nation's counties and cities will become part of the initiative. The goal of the DOH is to make every county and city in Taiwan age-friendly by 2014.
2. In August 2010, the DOH hosted the International Conference on Age-Friendly Health Care. Many overseas and local experts and scholars, including those from the UK, Singapore and Japan, were invited to share their experiences. The conference was attended by over 300 health professionals from 67 hospitals and clinics. Eight hospitals conducted self-assessments after the conclusion of the conference. As of April 2011, seven hospitals were certified.
3. In 2009, while carrying out its "Health Promotion Project for the Elderly (2009-2012)," the DOH enumerated its eight core tasks: physical fitness, fall prevention, healthy diets, oral health, tobacco control, mental health, social participation, preventive care for the elderly, and screening services. In 2010, the DOH matched 1,220 community care sites under the Ministry of the Interior with initiatives such as "Healthy Cities," "Safe Communities" and "Community Health Building" so as to sponsor a series of activities aiming at promoting good health among the elderly. It succeeded with 73% of its matches. In 2011, aiming to make health-promoting services more accessible to the elderly by offering them in their neighborhoods, local government health agencies encouraged hospitals and clinics within their jurisdictions to collaborate with local community-care sites and other community institutions to host these activities.
4. Since 2011, the DOH has encouraged senior citizens to join regional teams to attend the national healthy and fun games for the elderly that it sponsors once a year. The aim is to encourage the elderly to get together with their teammates to practice, so as to enhance physical, mental and societal health. By June 2011, 590 teams had been formed.

Section 2. Chronic Diseases Control

1. The DOH provides preventive care services for adults, services include: physical checkups, blood and urine tests and health consultations. These free services are available once every three years to people aged between 40 and 64, and once every year to people above 65 years of age. In 2011, a total of 1.083 million people accepted the services. The services also helped to detect

a positive rate of 20.8%, 8.1% and 12.0%, respectively for blood pressure, blood sugar and blood cholesterol levels among the examinees.

2. Metabolic Syndromes

The DOH has published the Metabolic Syndrome Prevention manual and other related promotional and teaching materials. It has also continued to promote its program for healthy waistlines and related workshops for administrators, nurses, and nutritionists at senior high schools, junior high schools and elementary schools.

3. Diabetes Prevention

In 2010, 167 hospitals and clinics and 455 diabetes support groups participated in a DOH-sponsored program to promote diabetes health. The DOH also strived to promote a shared-care network for diabetics in each county and city and a certification system for diabetes health professionals. In 2010, 6,736 clinical caregivers and 4,061 instructors received certifications.

4. Cardiovascular Diseases Prevention

1) The DOH joined forces with local health agencies to promote "prevention of the 3-highs" (hypertension, hyperglycemia and hyperlipidemia). In 2010, over 50% of the public 18 years and older knew their own blood-pressure levels, over 40% knew, the cut-off values of blood sugar, and over 57.6% had knowledge about prevention of chronic kidney diseases.

2) To make blood-pressure measurement more accessible, the DOH set up more community locations (other than hospitals and clinics) that offered these services, including local government agencies, community-care sites, community centers, pharmacies, retail stores, and workplaces. By the end of 2010, there were a total of 1,400 blood-pressure-measurement stations.

5. Chronic Kidney Diseases Prevention

In 2010, the DOH recognized 108 hospitals and clinics for their work in promoting the health of patients with chronic kidney disease. There were a total of 15,899 newly admitted and 51,305 existing patients. The DOH also published a manual on chronic kidney disease prevention and control as a reference book for healthcare personnel.

6. Menopausal Health

To better serve women going through menopause, the DOH established a toll-free hotline staffed with trained counselors to provide counseling services, published a newsletter, and offered valuable menopause-related healthcare information through a variety of media channels.

Section 3. Cancer Control

After the passage of the Cancer Control Act in 2003, the DOH convened meetings of the Central Cancer Prevention and Control Conference and the Cancer Prevention and Control Policy Commission on a regular basis. From 2005 and 2009, the DOH carried out its "Five-Year National Cancer Control Program." In 2010, the program won a Sustainable Development Award from the National Council for Sustainable Development of the Executive Yuan under the category: Excellence in Execution of a Sustainable Development Plan. To help lower cancer mortality rates by expanding cancer-screening services, the DOH launched the "Second Phase Cancer Control Program—Cancer Screening (2010-2013)" in 2010.

1. Cancer Incidence

According to statistics in the 2008 Cancer Registry, crude incidence rates of cancer for

men and women were 389 and 304 per 100,000 persons, respectively. If calculated and adjusted by the 2000 WHO world population structure, standardized incidence rates for men and women were 317 and 238 per 100,000 persons, respectively. The top ten cancers for men and women are listed in Tables 3-1 and 3-2.

2. Betel quid hazards prevention and control

Since 2004, the DOH has strengthened its efforts to fight against betel nut consumption through life-skills training programs in senior high schools and vocational schools in counties and cities where the population is at a high risk for oral cavity cancer. The DOH also created a supportive environment for a betel-nut-free military. In 2010, through local health departments and various NGOs, the DOH assisted 120 workplaces where betel quid chewing was prevalent to create a betel-nut-free environment. According to statistics, the betel quid chewing rate among men aged 18 and older dropped from 17.2% in 2007 to 12.5% in 2010.

3. Cancer Screening

1) The DOH's preventive health services offer one free Pap smear test per year to women aged 30 and older, biennial mammography screening for women aged 45 to 69 (as well as to women aged 40 and 44 relatives within second degree of kinship inflicted with breast cancer), one oral cavity cancer screening every two years to people aged 30 and older who chew betel quid or smoke, and one stool-occult blood test every two years to people aged 50 and 69.
2) In 2010, a total of 4,406,000 people underwent screening for cancers, attaining a target achievement rate of 107%. Among those who underwent screening, 10,757 were diagnosed with cancer, and 32,865 were diagnosed with precancerous lesions. For those eligible for the various free tests, 60% had Pap-smear test within the last three years, and 21.5% received mammography screening, 22% had colorectal cancer screenings and 32% had oral cavity cancer screenings within the last two years. From January to June of 2011, a total of 2.21 million people were screened. Among those who were screened, 3,305 were diagnosed with cancer, and 9,354 were diagnosed with precancerous lesions.
3) The DOH's "national program for cancer screening and quality promotion" signed up 232 hospitals as "cancer lifesavers." In 2010, screening services grew twofold over the previous year (cervical cancer 110%, breast cancer 220%, oral cancer 450% and colorectal cancer 1620%).

4. Promoting Cancer Treatment and Care Quality

1) In 2008, the DOH started to implement the accreditation of cancer-care quality at hospitals with over 500 newly diagnosed cancer cases. Between 2008 and 2010, 41 hospitals received the accreditation. The DOH then commissioned the National Health Research Institutes to make revisions that led to the current accreditation system, which was piloted in eight hospitals in 2010 and formally adopted in 2011. What's more, the DOH also drew up a program to evaluate cancer referral hospitals, so as to construct a cancer-prevention network and deliver seamless cancer care.
2) In 2010, the DOH started to fund non-governmental organizations and hospitals to establish one-stop cancer resource in hospitals, which provides key cancer-related resources and information to patients and their families.
3) The DOH encouraged hospice and palliative care for cancer patients. By yearend 2010, hospice hospitalization, hospice residential care and joint hospice care services were available at 49, 72 and 69 hospitals, respectively. From January to June in 2010, the hospice shared-care had served 9,000 some cancer patients.

Table 3-1 Incidence of Ten Leading Cancer for Male, 2008 (excluding carcinoma in situ)

Site	No. of Cases	Crude Incidence rate (per 100,000)	Age-Standardized Incidence rate (per 100,000)
Liver and intrahepatic bile ducts	7,401	63.7	52.6
Colon, rectum, rectosigmoid junction and anus	6,277	54.0	43.9
Lungs, bronchus and trachea	6,194	53.3	42.6
Oral cavity, oropharynx and hypopharynx	5,349	46.0	37.6
Prostate	3,603	31.0	24.6
Stomach	2,303	19.8	15.5
Esophagus	1,849	15.9	12.9
Bladder	1,476	12.7	10.3
Skin	1,380	11.9	9.4
Nasopharynx	1,162	10.0	8.3
Others	8,177	-	-
Total	45,171	388.5	317.3

Table 3-2 Incidence of Ten Leading Cancer for Female, 2008 (excluding carcinoma in situ)

Site	No. of Cases	Crude Incidence rate (per 100,000)	Age-Standardized Incidence rate (per 100,000)
Breast	8,136	71.3	56.1
Colon, rectum, rectosigmoid junction and anus	4,727	41.4	31.5
Lungs, bronchus and trachea	3,322	29.1	22.3
Liver and intrahepatic bile ducts	3,164	27.7	21.6
Cervix	1,725	15.1	11.8
Thyroid	1,561	13.7	11.4
Body of uterus	1,424	12.5	9.8
Stomach	1,275	11.2	8.5
Skin	1,205	10.6	7.9
Ovary	1,110	9.7	7.8
Others	6,998	-	-
Total	34,647	303.6	237.8

Chapter 5.
Infrastructure for Health Promotion

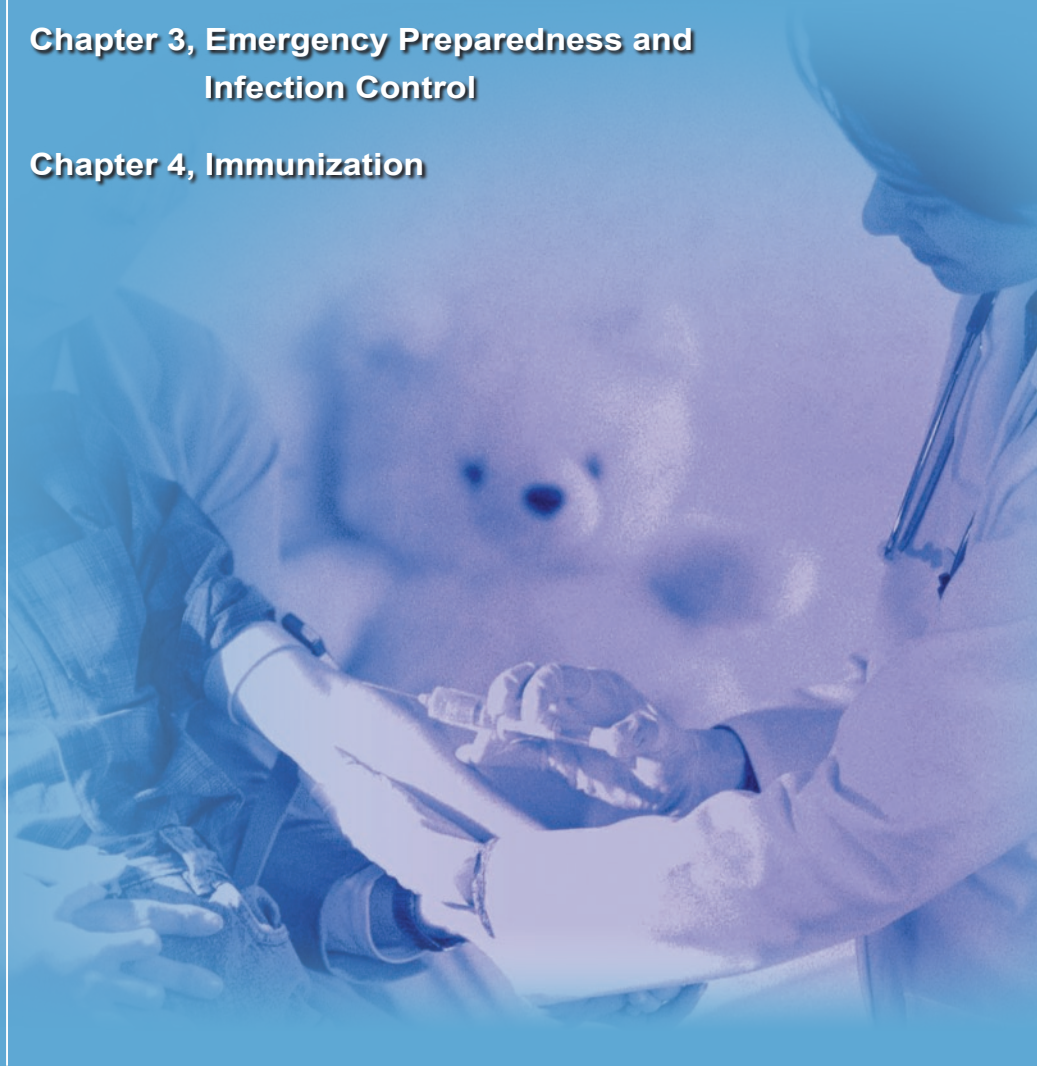
In order to establish a surveillance system for non-communicable disease, series of survey that target on whole population or subpopulations across the life span have been conducted regularly through community-based face to face interview, telephone interview or school-based student self-administered questionnaire.

1. Surveys as steps taken to establish systematic health surveillance from 2006 to 2011 and those have been planned for 2012 to 2015 are listed Table 3-3.
2. A wide variety of mechanisms were developed to disseminate survey results for policy making, program evaluation, and used for health education to improve public awareness of health-related issues.
3. The DOH has established a web-based Interactive Online Query System for Health Indicators (http://olap.bhp.doh.gov. tw/). It provides users with prompt access to tabulation and graphic of various health indicators that use data from health survey and reporting system. At the end of June 2011, a total of 431 health indicators were available.

Table 3-3 Health Surveys from 2006 to 2015

Survey	● cross-sectional survey ▲ longitudinal survey									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
【Community-based face to face interview survey】										
National Health Interview Survey				●				●		
Taiwan Longitudinal Study on Aging		▲				▲				▲
Family and Fertility Survey			●				●			
Taiwan Birth Cohort Study	▲	▲	▲		▲	▲	▲	▲		
【School-based self-administered questionnaire survey】										
Global Youth Tobacco Survey of Junior High School Students	●		●		●	●	●	●	●	●
Global Youth Tobacco Survey of Senior High School Students		●		●		●	●	●	●	●
Taiwan Youth Health Survey of Junior High School Students	●		●		●		●		●	
Taiwan Youth Health Survey of Senior High School Students		●		●		●		●		●
【Telephone Surveys】										
Adult Smoking Behavior Survey	●	●	●	●	●	●	●	●	●	●
Behavioral Risk Factor Surveillance System		●	●	●	●	●	●	●	●	●
Surveys on Health Promotion Issues	●	●	●	●	●	●	●	●	●	●

IV Communicable Disease Control



For effective control of communicable diseases, in addition to continued efforts in epidemic surveillance and investigation, preparedness for disease prevention, immunization, research and development, more should be done to expedite the amendment of laws and regulations to be in line with global trends, and to establish a disease control command system. It is hoped that through a comprehensive disease control system, communicable diseases can be detected early and prevented in order to ensure the health of all the people.

Chapter 1. Communicable Disease Control Act and Legal Framework

In order to arrest the occurrence, infection and spread of communicable diseases, the Communicable Disease Control Act and related regulations were formulated to specify the obligations and rights of the people for the prevention and control of communicable diseases. The Act and regulations also provide a legal basis for public health personnel to administer disease control activities.

Section 1. Laws and Regulations of Communicable Disease Control

The Communicable Disease Control Act and the HIV Infection Control and Patient Rights Protection Act are two crucial acts governing the implementation of communicable disease prevention and control in Taiwan. To strengthen prevention and control efforts, revisions were made to four related legal orders and one administrative rule.

1. Communicable Disease Control Act

1) In response to the outbreaks of H1N1 in Taiwan and overseas, the DOH amended portions of the "Regulations Governing Operation of the Communicable Disease Control Medical Network" and the "Regulations Governing the Operational Procedures and Compensation for Designating and Expropriating for the Establishment of Quarantine and Isolation Site and Requisition of Related Personnel." The amendments were made to improve the functioning of the Communicable Disease Control Medical Network and mechanisms for designating and expropriating sites to be used for quarantine and isolation, as well as the requisition of related personnel. The overarching goal of the amendments is to ensure a robust system for preventing and controlling communicable diseases.
2) To ensure adequate deliberation is given when there are suspected cases of adverse reactions to vaccinations and to promptly clarify the causes of such adverse reactions so as to prevent negative impacts on the implementation of the National Immunization Program, the DOH amended portions of the "Regulations Governing Collection and Review of Relief Funds for Victims of Immunization."
3) In response to the challenge to public health posed by NDM-1, an enzyme that can make bacteria in the gastrointestinal tract resistant to antibiotics, the DOH revised its publicly announced prevention measures for Class IV and Class V Notifiable Infectious Diseases, adding "NDM-1 enterobacteriaceae infections" to the list of Class IV Notifiable Infectious Diseases.

2. HIV Infection Control and Patient Rights Protection Act

To prevent inaccurate health reports issued abroad to foreign spouses of ROC citizens from resulting in the spread of HIV virus in Taiwan, the DOH has amended provisions of Point 4, Point 5, and Point 7 of the "Operational Directives for Reviewing Applications of Stay or Residence for HIV-Infected Individuals." These amendments are aimed at verifying the accuracy of the applicants' HIV testing reports and ensuring the rights of those foreign spouses who have entered Taiwan before these amendments.

Section 2. Frameworks of Communicable Disease Control

1. Prevention Network

Communicable diseases are controlled at two levels, the central and the local levels. The Centers for Disease Control of the Department of Health (Taiwan CDC) is the highest authority in Taiwan to be responsible for the formulation of communicable disease control strategies and plans, and also for the supervision, direction and evaluation of communicable disease control efforts executed by local government agencies. County/city health agencies formulate their own action plans in accordance with the strategies and plans established by the central government, and execute various communicable diseases control programs accordingly.

2. Testing Network

The Center of Research and Diagnostics of the Taiwan CDC is responsible for the laboratory testing and research of various communicable diseases in the nation. To meet the demands of the laboratory testing of various communicable diseases, 12 virus laboratories and 9 *tuberculosis bacilli* laboratories have been contracted and 202 testing services for communicable disease diagnosis have been certified. A National Plan for the Quality Management of the Collection and Transportation of Specimens of Communicable Diseases has also been formulated to assure the quality, timing and safety of specimens submitted by local health agencies for laboratory testing.

3. Command System

Due to the lack of a disease-oriented disaster control center for coordination between the central and the local governments when the SARS epidemics devastated Taiwan in 2003, the National Health Command Center (NHCC) was established in 2005 to consolidate relevant information supplied by ministries and departments concerned, local governments and private sectors organizations, and to transfer it into real-time information needed by decision makers. Along with the implementation of the International Health Regulations 2005 (IHR 2005), a contact point for liaison with other countries has been set up to facilitate rapid notification and response concerning major epidemics and public health emergencies.

Section 3. Communicable Disease Control Medical Network

To upgrade emerging communicable disease response competency, the Infectious Disease Control Medical Network was set up in 2003. It was later renamed the Communicable Disease Control Medical Network.

In 2008, the Regulations Governing Operation of the Communicable Disease Control Medical Network was announced. The nation is divided into six sub-networks; 137 hospitals with isolation wards (25 responding hospitals are identified from them) are designated to isolate and care for patients with communicable diseases.(Figure 4-1) To assure that the emergency response hospitals can mobilize their resources to manage patients during disease outbreaks, they are required to devise emergency response plans of their own and conduct drills and training sessions according to their plans in order to ensure and improve their emergency preparedness and response.

Section 4. Disease Surveillance and Investigation Mechanism

The number of cases of notifiable infectious diseases in Taiwan in 2010 is shown in Appendix 2. The surveillance and investigation of epidemics situations are as follows:

1. Multiple Communicable Diseases Surveillance Systems

The DOH has established various public health surveillance systems, including school-based surveillance system and surveillance system for populous institutions to improve the overall capacities of the national disease surveillance network

1) School-based surveillance system: Between 2001 and 2011, 645 elementary schools

participated in this project, covering around 96.2% of all townships throughout the nation. Diseases monitored through this system include influenza-like illness, hand-foot-mouth diseases or herpangina, diarrhea, and acute hemorrhagic conjunctivitis..

2) Surveillance system for populous institutions: As of the end of June 2011, more than two thousand institutions participated in this project. Diseases monitored through this system include respiratory and gastrointestinal tract infections, and disease clusters. Data on confirmed and reported cases is collected and analyzed weekly

2. Integration of Surveillance Systems

1) Work to integrate various reporting systems is continued in order to achieve the goal of creating single-window reporting, thus improving the efficiency of disease notification.

2) An integrated national disease control information network was set up to collect communicable disease information through multiple channels and to timely monitor and control epidemics.

3. Investigation of Epidemics

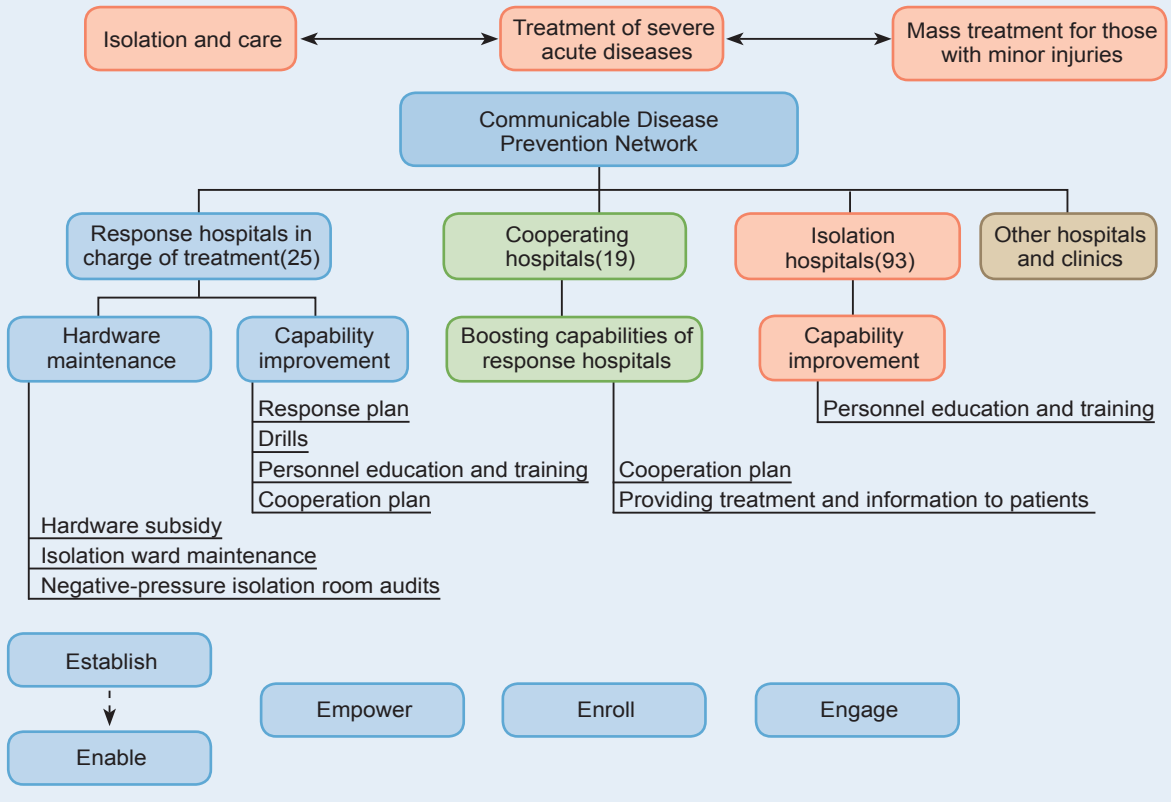
1) The Field Epidemiology Training Program (FETP) is continued to develop skilled manpower in field epidemiology.

2) In 2010, the DOH investigated 15 cases of sudden disease outbreaks and disease outbreaks of unknown causes, including outbreaks of botulism and salmonella.

Chapter 2. Control of Major Communicable/Emerging Communicable Diseases

Diseases such as plague, smallpox, rabies, malaria and poliomyelitis have been successfully

Figure 4-1 Communicable Disease Control Medical Network



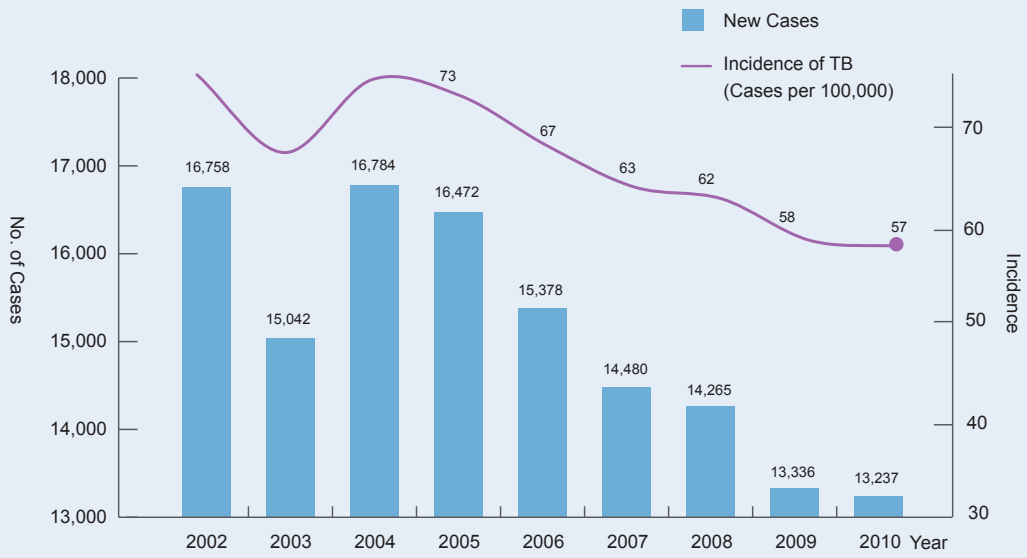
eradicated in recent years. However, along with the increasingly frequent international interaction, the threats of emerging and re-emerging communicable diseases have increased day by day, and the control of communicable diseases has once again faced serious challenges.

Section 1. Tuberculosis Prevention

Tuberculosis cases in Taiwan totaled 13,237 in 2010, showing a downward trend in the annual number of TB cases in Taiwan, In conjunction with the WHO's "The Global Plan to Stop TB 2006-2015," the DOH has been promoting a plan to halve the number of TB cases by 2015. It is anticipated that by 2015 the rate of incidence will indeed be halved (See Figure 4-2). The plan aims to accomplish the following: to establish a network to deliver patients with multidrug-resistant tuberculosis to medical-care networks as soon as possible, to offer TB patients comprehensive medical treatment and care, and to implement the Directly Observed Treatment Short-Course (DOTS). The results of these efforts in 2010 are listed below:

1. The DOH has been promoting the Directly Observed Treatment Short Course (DOTS), using the strategy of "drug delivery directly to patients, on-site supervision of medication consumption, and departure after medication" to effectively lower treatment failure rates and reoccurrence rates, preventing occurrence of multidrug-resistant tuberculosis. Among all TB patients in Taiwan, 92% participated in DOTS.
2. The DOH has been promoting the Multiple Drug-Resistant (MDR) Tuberculosis Med-Care System through collective management and care and by the expanded DOTS plan (DOTS-Plus), improving the success rate of treatment of MDR-TB cases.
3. The Implementation Guidelines on Restriction of Infectious Tuberculosis Patients from Boarding Public Aircraft for Going Abroad to interrupt the spread of tuberculosis and to improve the country's international image.
4. Subsidizing chronic infectious pulmonary tuberculosis patients hospitalization and living expenses. Encouraging chronic infectious TB cases to be long-term hospitalized, isolating the transmission source in communities.
5. The DOH's "Latent TB Infection" (LTBI) Treatment Program is aimed at identifying all those under the age of 13 who have had contact with TB patients. Those with latent infections will be put on the Direct Observation Preventive

Figure 4-2 Reported TB cases, 2002-2010



Treatment (DOPT) to reduce the potential of future outbreaks. In 2010, 3,874 patents with latent TB infections received DOPT, while only 2,650 patients received DOPT the previous year.

6. In 2010, the DOH's mobile medical vans performed chest X-rays on 306,704 people throughout Taiwan—44,425 more than the previous year. In 2010, 290 TB cases were confirmed, a 43.6% increase from the 202 cases detected in 2009.

Section 2. Communicable Diseases of the Enteric Tract

1. Enterovirus

In 2010, 16 cases of severe enterovirus infection were confirmed with no death. Prevention strategies for 2010-2011 include the following:

1) The DOH has commissioned local public health agencies to develop an enterovirus control reinforcement program and to train local medical personnel to promote community health education.
2) The DOH invited enterovirus experts and related health administrators to share their clinical experiences and contribute to the final revisions of the "Enterovirus 71 Patients with Severe Complications in Clinical Settings: Key Points to Consider". The report is aimed at meeting clinical needs and improving treatment results.
3) Operating a medical network to track severe cases of enterovirus infection and to facilitate direct "horizontal" contact between responsible hospitals so as to speed up the transfer of enterovirus patients and improve enterovirus infection treatment and management throughout Taiwan, thus lowering the mortality rate and minimizing the occurrence of sequelae.
4) The DOH has completed the initial development of rapid diagnostic reagent for enterovirus 71 and made arrangements to transfer the technology in the hope of quickly realizing mass production and screening groups that are at a high risk for severe complications as soon as possible. Simultaneously, in order to reduce the rate of the infection of enterovirus 71, as well as to lower the mortality rate and minimize the occurrence of sequelae, the DOH has begun working on the "Plan for Cooperative Development of Enterovirus 71 Vaccine."

2. Hepatitis A

Since June 1995, the DOH has continued to provide hepatitis A immunization for preschool children in 30 aboriginal regions and nine villages in lowland areas adjacent to aboriginal regions. The hepatitis A incidence in the aboriginal areas has dropped from 90.7 per 100,000 in 1995 (183 confirmed cases) to zero cases in 2010, demonstrating the outstanding success of the control program.

Section 3. Vector-borne Communicable Diseases

1. Dengue Fever

1,896 dengue fever cases were confirmed in

2010, including 304 imported cases and 1,592 indigenous cases, which includes 18 cases of dengue hemorrhagic fever and 2 deaths. The annual incidence of indigenous dengue fever cases over the recent decades are shown in Figure 4-3.

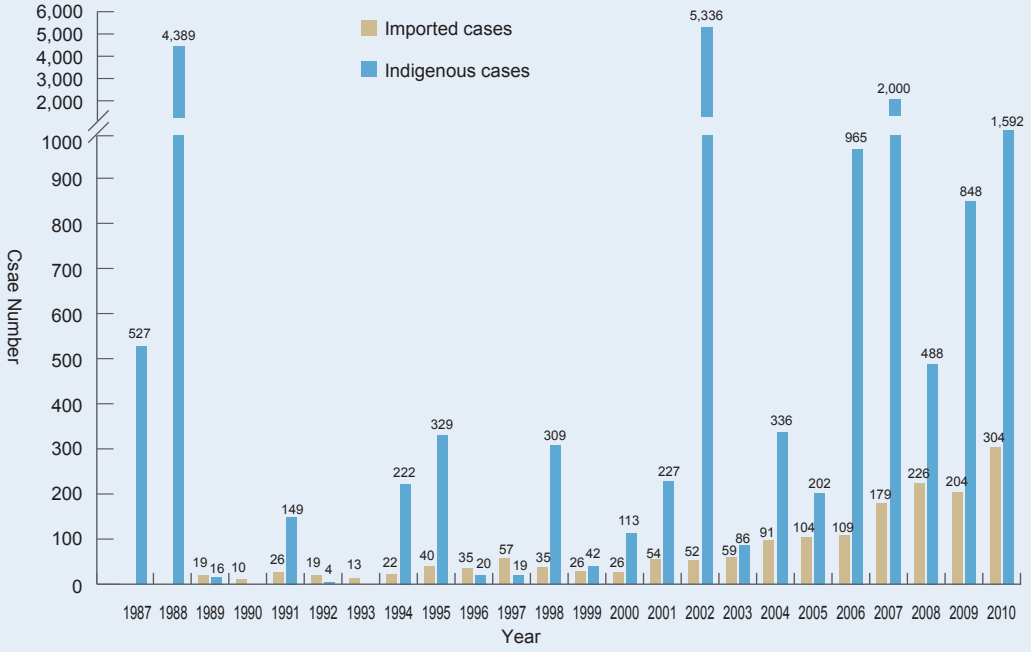
Strategies of prevention and control in 2010 as follow:

1) The DOH promoted a policy to reduce breeding sources for diseases, including receptacles, within communities.
2) The DOH adopted a policy of spraying for mosquitoes to control the epidemics, which includes employing expert assessments and implementing preventive measures only in high risk regions. The policy has been adopted so as to prevent disease-carrying mosquitoes from developing resistance to these chemical sprays and ensure the effectiveness of the chemical sprays when utilized during epidemics.
3) The DOH established a mobilization mechanism specifically for dengue control and prevention efforts, holding conferences and other activities to coordinate relevant government agencies and continually carrying out joint inspections.
4) The DOH strengthened health education efforts among the general population, revised guidelines for dengue control, and reinforced related training for medical and disease-prevention personnel.
5) The DOH strengthened disease surveillance through the implementation of fever screening of incoming travelers at international airports and the utilization of dengue fever rapid tests.

2. Japanese encephalitis

Each year, Japanese encephalitis is prevalent for several months from May to October with peaks reported from June to July. In 2010, 33 cases of Japanese encephalitis were confirmed.

Figure 4-3 Annual Incidence of Dengue Fever, 1987 -2010



3. Malaria

Malaria has been eradicated in Taiwan for 46 years. To maintain Taiwan's malaria-free status and safeguard people's health, the DOH continues to implement malaria surveillance to prevent introduced infections caused by imported cases. Health education campaigns have been reinforced so as to alert travelers to avoid mosquito bites. In 2010, 21 cases of malaria were confirmed in Taiwan, all of which were imported.

Section 4. Blood and Body Fluid-Transmitted Communicable Diseases

1. AIDS

1) By the end of 2010, the cumulative total of HIV-infection cases reported in Taiwan stood at 20,057. Among these, 7,333 HIV-positive individuals have developed full-blown AIDS, and 2,904 have died. In 2010, 1,796 new cases were reported in Taiwan.
2) The DOH has continued to carry out its "Harm Reduction Program". The program's main strategies include the provision of health-education and counseling services, the implementation of a needle-syringe program, and the methadone maintenance treatment (MMT) program. At the end of 2010, there were a total of 100 institutions providing alternative treatment, 952 public-health counseling service stations and 379 vending machines that offered sterile syringes. The recall rate of needle has gradually increased to 88%.
3) The DOH has been implementing four five-year "HIV Prevention and Control Plan" since 1994. A total of 45 designated AIDS medical institutions throughout the nation offer free treatment. In addition, 22 institutions offered free anonymous screening and testing for sexually transmitted diseases in 2010. Some 20,397 people took advantage of these services, and 2.6% of them turned out to be HIV-positive.
4) To prevent vertical transmission of HIV from mothers to children, all pregnant women are required to screen against HIV beginning 2005. By 2010, 77 pregnant women had been found to be HIV–positive, including 20 foreigners.
5) Prevention strategies for men who have sex with men (MSM)
   a) Establishing three gay community health centers (one each in northern, central and southern Taiwan) to provide a wide variety of gay-friendly health services.
   b) Setting up an AIDS-prevention website specifically oriented toward gays.
   c) Producing creative promotional materials to promote AIDS prevention, strengthen the concept of self-health management, and provide safe sex information.
   d) Working with NGOs to provide AIDS testing and consultations at places frequented by gays such as saunas and pubs.

2. Sexually Transmitted Diseases (STD)

Work is continued in promoting health education of the public on the control of sexually transmitted diseases and in providing laboratory testing services of HIV for patients of sexually transmitted diseases. In collaboration with private institutions, STD-friendly clinics were set up. Supervision and treatment of contacts are strengthened for more effective prevention. In 2008, the "Universal Screening of HIV for STD patients" was administered. By the end of 2010, 79,836 patients took the screening test.

3. Hepatitis B and C

1) Screening of pregnant women for hepatitis B during prenatal care visits and immunization of the newborns against hepatitis B are conducted. The carrier rate of children at age six has declined from 10.5% before implementing the immunization program to only 0.8%. Further, the DOH has been providing hepatitis-B booster shots to preschool children and first-graders.
2) The number of hepatitis B carriers in Taiwan

is approximately 2.5 million to 3 million and the number of hepatitis C infections is approximately 700,000 to 800,000. Beginning October 1, 2003, a pilot project, Enforcing Hepatitis B and C Trial Treatment Program, has been implemented to significantly reduce incidences of liver cirrhosis and liver cancer.

Section 5. Prevention and Control of Emerging Communicable Diseases

To establish a national database of animal hosts of zoonotic pathogens, and to establish related laboratories, testing methods, and capabilities, since 2005 the DOH has commissioned research institutions to proceed with epidemiological studies of known animal hosts of zoonotic pathogens and to establish a set of testing methods.

Section 6. Prevention and Control of Imported Communicable Diseases

The following control measures have been implemented to prevent communicable diseases from entering the country:

1. Quarantine

Necessary quarantine measures are conducted on ships, aircraft, crew members and passengers. The DOH teamed up with port agencies to establish an "international port sanitary group" to ensure sanitation and safety at arrival/departure gates at international ports to prevent importation or exportation of communicable diseases. Additionally, for passengers who are suspected of communicable disease but assessed to not pose an imminent public health risk, the quarantine authorities may permit them to continue their international journey. According to IHR (2005), assess the core capability of specified ports, such as Taoyuan International Airport and Kaohsiung Harbor.

In 2010, a total of 14,980,936 people entered the nation through its international ports and airports. Quarantine stations detected 18,513 persons showing symptoms of notifiable infectious diseases. Among those, 213 persons were found to be actually suffering from those diseases.

2. Communicable Disease Control in Travel

1) International ports and airports use thermal imagers to screen arriving travelers. Those suspected of infections are asked to fill out the "Communicable Disease Prevention Survey" so as to facilitate diagnosis and implementation of possible follow-up disease prevention measures. In addition, the DOH has installed light boxes, wall stickers, and display stands in order to disseminate their messages and produced health education promotional materials and health education promotional videos so as to increase public awareness about the potential risk for contracting communicable diseases while traveling and to promote the concept of self-health management.
2) In January of 2008, the DOH established the "Training Center for Travel Medicine" that is responsible for three main duties: A. providing travel medicine outpatient services, B. organizing educational training, and C. handling publication and dissemination of related printed materials:
   a) In 2010, the center received more than 3,878 patient visits for medical services, as well as 4,963 phone calls and 10,335 visits to its website. It hosted five group sessions, attended by a total of 81 individuals, on public health education.
   b) Travel-medicine education training: At various times relevant training and seminars have been organized for medical personnel and travel-industry workers. In 2010, the center held 20 regional training courses for medical personnel, two national-level seminars, and seven training sessions for tour guides. In sum, more than 2,400 participants attended.
   c) Publication of related materials: These include travel medicine guides for different

regions, including Southeast Asia, mainland China, Hong Kong and Macao, South America, and Africa, and travel medicine guides specifically directed at tour guides. The Travel Medicine Bulletin is also regularly published seasonally.

Chapter 3
Emergency Preparedness and Infection Control

Over the recent year, the increase in the number of biological incidents has highlighted the importance of preparedness for pandemic, resource management, hospital infection control, and potential bioterrorist attacks.

Section 1. Influenza Pandemics

1. Response to the Outbreak of H1N1 in 2009-2010

The second wave of the pandemic H1N1 influenza ended in late February of 2010. The alert level was lowered to normal by the end of March 2010. On August 10, 2010, the World Health Organization announced the situation had moved into the post-pandemic phase, but cautioned that all nations should continue to monitor the situation and prepare for future outbreaks. The WHO also urged all countries to review and assess their disease-prevention measures. Measures implemented in Taiwan are listed below:

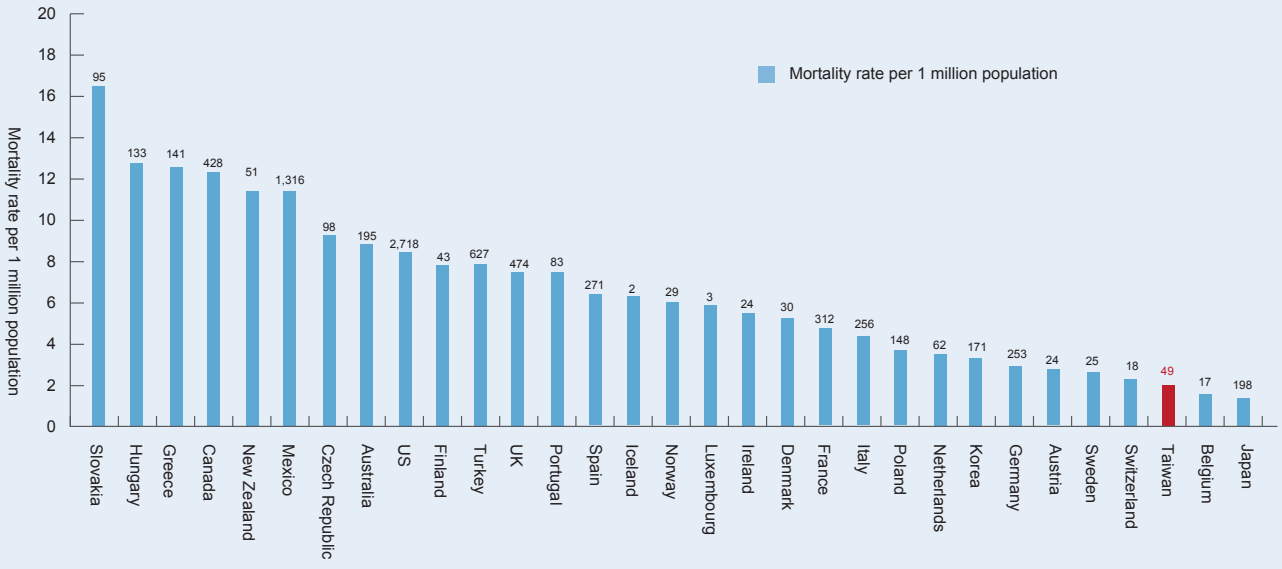
1) Efforts to improve accessibility to antiviral drugs: From August 15, 2009 to March 31, 2010, the DOH, via the national health-insurance system, provided rapid screening for influenza antigens and the drug Tamiflu under government budget. These actions proved to effectively speed up the diagnosis process and prevent delays in treatment.
2) The DOH continued to provide H1N1 vaccinations up until the end of flu season (February 2010). It provided a total of 5.65 million vaccinations, attaining a coverage rate of 24.5% for Taiwan as a whole, which was ranked fifth globally. Among healthcare professionals, the rate stood at 76%, which was the first globally. Among students, the rate was 75%, tying for the first place with South Korea. After the implementation of the vaccination plan, the H1N1 epidemic in Taiwan rapidly subsided. In accordance with the WHO's recommendation, Taiwan has continued to provide vaccinations. Through the end of November 2010, a total of 5.695 million people in Taiwan were vaccinated, resulting in a coverage rate of 24.7 % .
3) The mortality rate of H1N1 influenza was only about one-third of the average level of all OECD countries, and roughly one-fifth of the rate in the US. Among all OECD nations, only Belgium and Japan had lower mortality rates than Taiwan (See Figure 4-4). The 2009-2010 H1N1 outbreak was the first pandemic disease Taiwan confronted ever since it returned to the 62nd World Health Assembly, and the first outbreak since Taiwan joined the operation of the IHR (2005) framework. Thanks to the abundance of information and Taiwan's high preparedness level, public life and social functioning in Taiwan were unhindered, and there were no economic repercussions. Those results bear witness to the outstanding prevention and treatment methods adopted. Taiwan can now share its experience with other nations—once again demonstrating the

importance of its participation in the WHO.

2. Seasonal Flu Prevention Efforts, 2010-2011

1) Implementation of annual vaccination program: The DOH began implementing annual seasonal flu vaccination program on October 1, 2010. In November, 2010, the vaccination program was opened up to the fifth- and sixth-grade students, and then to the general public on December 1, 2010.
2) Provision of antiviral drugs: In response to the flu season, from January 25 to April 10 of 2011, the DOH broadened the criteria for receiving free flu antiviral drugs. Apart from the earlier criteria providing access to persons meeting the case definition of persons with influenza-like complications, as well as persons with signs of severe complications or cardiovascular, pulmonary, metabolic or renal disease, the criteria were broadened to include patients with influenza-like illness who have a fever longer than 48 hours and family members/coworkers/classmates with symptoms of confirmed influenza cases. In addition, to increase public access to these free antiviral drugs, the DOH notified all local health departments and bureaus to increase the number of distribution locations. There were 1,186 distribution locations in all.
3) Increasing access to medical care: The DOH encouraged hospitals to offer outpatient services to those with flu-like symptoms so as to prevent emergency rooms from becoming overwhelmed with flu patients and to reduce the chances of cross infection.
4) Conducting health education and promotion: Through multiple channels, the DOH has promoted vaccination, diligent hand-washing, and proper cough etiquette.
5) Collecting real-time information about epidemics: The DOH has established multiple surveillance systems focusing on the spread of a given disease, viral activity, and the seriousness of the disease. Furthermore, it regularly alerts citizens to maintain vigilance.

Figure 4-4 Comparison of H1N1 Mortality Rate in Taiwan with Other OECD Countries



Notes: The number of deaths in other non-OECD country : China (805)、Hong Kong(81)

6) Discussing important policies: The DOH invited experts from various fields to convene the Advisory Committee on Communicable Diseases Prevention to discuss and review important disease prevention and control policies.

3. Influenza A/H5N1 vaccination policies:

In view of the frequent outbreak of the highly pathogenic H5N1 (avian flu) among humans, the DOH launched a voluntary vaccination program that makes effective use of the domestic stockpile of H5N1 vaccine for influenza policy-makers and experts, medical personnel, poultry and livestock workers, animal-disease prevention and control personnel, international port and airport security checkpoint personnel, and frequent travelers to nations at high risk for A/H5N1 from August to November of 2010. The DOH conducted this program again from March to August 2011.

Section 2. Counter Bio-Terrorism

In order to improve Taiwan's bioterrorism response capabilities, the DOH has continued to carry out relevant training and drills for Taiwan's biohazard response and verification experts (BRAVE). The DOH has also increased purchases of portable bio-warfare agent detection devices. Within 60 minutes (plus or minus ten minutes), these devices can detect biological warfare agents such as anthrax, plague, smallpox, and tularemia. In November 2010, the DOH held an international conference (“Workshop for Anti-Bioterrorism First Response Team 2010”) so as to strengthen the knowledge and capabilities of the BRAVE team members.

Section 3. Management of Personal Protective Equipment

1. To prepare for the potential threats of infectious diseases and biological disasters of biohazard outbreaks, stockpiles of personal protective equipment (PPE) and a management system have been established and managed. A three-level tier inventory system has been adopted and a 30-day reserve of goods and material

stockpiles has been respectively maintained by the central government, local government and medical institutions. The DOH has also signed several contracts such as replacement contract of isolation gowns and protective clothing service providers as well as inter-entity supply contract of N95 to fulfill all kinds of logistics needs. Furthermore, by linking the management systems of various medical institutions and public health agencies, the DOH is able to track national inventory quantity inventory of disease-prevention supplies in real time through the Management Information System (MIS).

2. To assure safety and quality of the central authority's stockpile as well as smooth deployment of emergency supplies, the DOH has entrusted its central warehouses to professional logistics firms, which provide swift delivery and proper storage environments in four separate locations. As a result, the DOH is able to ensure that all supplies can be promptly distributed to front-line disease-control staff and health-care worker.
3. The DOH has launched the “Medical Masks Joint Procurement and Logistics Program” . With the massive inventory of central authority as a buffer, the governments and hospitals would not only be able to retrieve quality-assured PPEs, but also able to satisfy a steady supply during a flu pandemic. The program can also boost the

efficiency of usage to avoid the central inventory from expiring and maintain a contingency system that deploys the central stockpile during a flu pandemic.

Section 4. Nosocomial Infection Control

The DOH has formulated and promoted policies to minimize healthcare-associated infections at medical institutions to protect patients. Important achievements in 2010 in terms of nosocomial infection control included the following:

1. To upgrade the quality of inspection on infection control in hospitals, the Taiwan Joint Commission on Hospital Accreditation was commissioned to conduct on-the-spot inspection of infection control in 495 hospitals.
2. To effectively monitor nosocomial infections, the DOH has continued to encourage hospitals to voluntarily participate in the Taiwan Nosocomial Infections Surveillance System (TNIS). Currently, 385 hospitals in Taiwan are participating in the system, which was launched to encourage hospitals to perform self-monitoring and to compare notes with other hospitals, thus facilitating improvements in the quality of infection-control work.
3. To guard against the spread of NDM-1 infections, which are caused by bacteria in the intestinal tract, and gain control over potential infections, the DOH has adopted the WHO disease prevention guidelines, including establishing a mechanism for reporting NDM-1 infections, strengthening promotion and overseeing the implementation of various infection control measures by medical institutions, and organizing related education and training.
4. In response to the WHO hand-hygiene promotion campaigns, the DOH has implemented the following measures:
   1) Certification of hospitals adopting proper hand hygiene protocols: On August 10, 2010, the DOH announced a plan to provide financial rewards for hospitals meeting hand hygiene certification. A total of 325 hospitals applied to participate in the plan.
   2) Establishment of hand-hygiene demonstration centers: The DOH commissioned the National Taiwan University Hospital, Tri-Service General Hospital and Kaohsiung Veterans General Hospital to implement hand hygiene measures following the WHO guidelines as a blueprint, to establish and implement a hand-hygiene promotion plan, and to create related handbooks and educational materials that can be used for a promotion campaign at the national level.
5. With reference to relevant guidelines and documents, the DOH formulated, in accordance with domestic conditions, the "Guidelines for Detecting Legionella pneumophila in Hospital Environments," and the DOH revised the "Guidelines for Monitoring Sterilization in Order to Control the Spread of Communicable Diseases" and "Suggested Preventative Vaccinations for Medical Personnel." These two sets of guidelines have been provided to hospitals for their reference. Moreover, hospitals are allowed to modify the guidelines accordingly to better suit their needs.

Section 5. Research and Laboratory Testing

1. In 2010, a total of 265,189 clinical specimens were collected by local health agencies for laboratory testing.
2. Starting July 4, 2008, the DOH began accepting applications from institutions providing testing services for infectious disease diagnosis. In 2010, 71 such laboratories were reviewed and certified. 196 inspection items were approved. In total, 202 laboratories and 826 inspection items were reviewed and approved.
3. The DOH initiated the "Development of Monitoring Technologies for Unknown/Emerging Infectious Pathogenic Agents" to strengthen the collection of unknown/emerging pathogenic agents, in hopes of improving the organization's

testing capacity for emerging communicable diseases.

4. "PulseNet, Taiwan" was created in 2006, continues to provide rapid diagnosis of food-borne diseases and pathogens to control the spread of epidemics. It also serves as a platform for information exchange and collaboration with international disease control institutions. Furthermore, the DOH established the "National Influenza Center, Taiwan" ,for better integrating international and domestic information related to influenza viruses so as to provide real-time information that can be used to prevent epidemics.
5. In collaboration with the National Institute of Infectious Diseases (NIID) of Japan, projects to construct a molecular epidemiology laboratory network for diseases prevalent in Asia such as dengue fever and other vector-borne diseases, and develop multi variable number tandem repeat analysis (MLVA) of intestinal bacteria are underway. A collaborative relationship has been established with the Aberdeen University of the UK and the Chiba University of Japan to exchange information on bacterial strains. In collaboration with the NIID of Japan, an Asian surveillance project on the tuberculosis Beijing strain is undergoing. The Taiwan CDC also participated in the WHO and US CDC-sponsored global rotavirus vaccine plan, and is a member of the Asian Rotavirus Surveillance Network (ARSN).
6. Taiwan Pathogenic Microorganism Genome Database (TPMGD): The TPMGD contains some 20 different pathogenic genotypes and relevant epidemiological data. It's open to all interested parties who can file requests for enterovirus or influenza viral sequences and related epidemiological information. In addition, the database provides a BLAST search for alignment and similarity of nucleotide or amino acid residues, and some other analysis functions such as primer design, Cluster, and TreeView, etc. are also included.

Section 6. Management of Laboratory Bio-safety

In accordance with the core principles of self-health management, accurate reporting, and key-point inspection, a legal basis for the management of infectious biological materials and laboratory bio-safety has been established.

By June 2011, a total of 503 agencies or institutions had established bio-safety committees (or designated personnel), and these committees have reported 159 types of Risk Group 2 (RG2) and 22 types of RG-3 infectious biological materials. In Taiwan, nineteen Bio-safety Level 3 (BSL-3) labs and one BSL-4 lab have been approved by DOH (three of which are temporarily suspended). Additionally, in 2010 the DOH carried out inspections of 32 BSL-2 negative pressure labs used for identifying Mycobacterium tuberculosis or drug sensitivity testing and the 19 BSL-3 labs.

Through inspections, the DOH expects that both the laboratories and the personnel will place importance on bio-safety self-management mechanism and ensure that lab work will be operated successfully and safely, which ultimately leads to the creation of a high-quality bio-safety management system in Taiwan.

Chapter 4. Immunization

Development of vaccines and immunization can effectively prevent and control vaccine-preventable diseases.

Section 1. Current Status of Immunization and Trend

Currently, the government provides infants and toddlers with free vaccinations under the schedule displayed in Table 4-1. The DOH also offers hepatitis A vaccinations and booster shots in aboriginal regions and other high-risk areas through local public health agencies and contracted hospitals and clinics. National immunization coverage rates are detailed in Figure 4-5. The DOH has also continued to inspect the vaccination records of students

entering elementary schools. Among those students, 99.85% had a vaccination record card. For those with incomplete immunization, arrangements are made for them to receive the needed shots.

In 2010 a national vaccine fund was launched based on Article 27 of the Communicable Disease Control Act. The fund looks for multiple sources of funding, lists budget items independently, and uses its money exclusively for the procurement of vaccines and implementation of immunization work. In July 2009, the DOH began to promote the vaccination of pneumococcal conjugate vaccines (PCV) for high-risk children under five years of age. Beginning January 2010, the DOH expanded the vaccination to children under five years of age from low-income households and children born after 2010 living in aboriginal areas or on offshore islands. Since March of 2010, the DOH has been promoting a five-in-one vaccination for diphtheria, tetanus, pertussis, haemophilus b, and polio, offering this high-quality combination vaccine to reduce the total number of vaccine adverse reactions and the total number of shots needed by children.

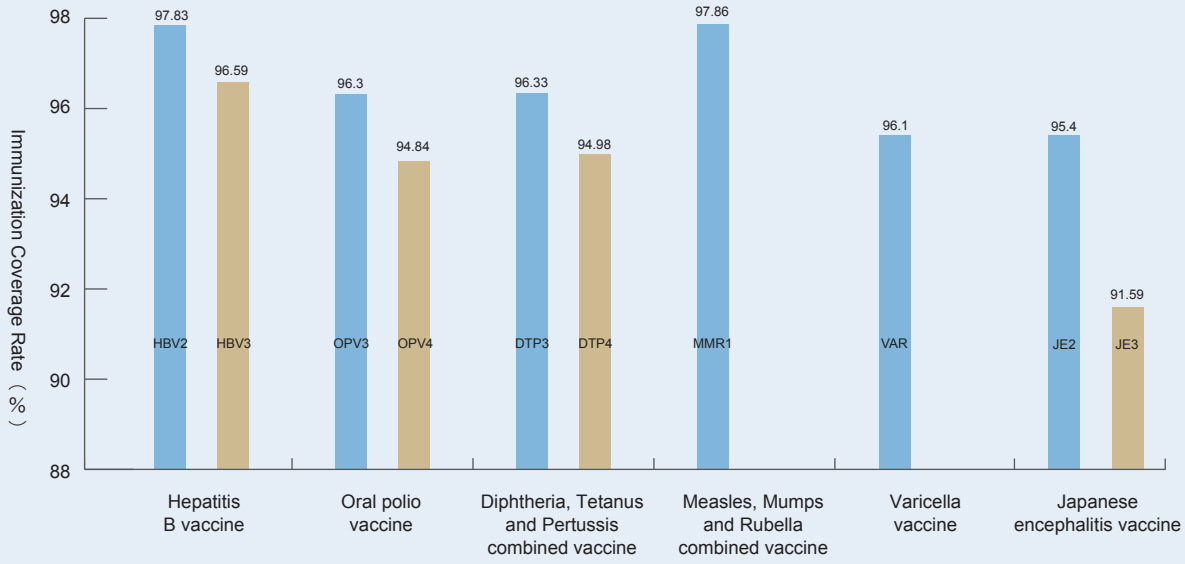
In 2010, the seasonal flu vaccination campaign began on October 1. There were six main vaccination targets: people aged 65 or over; people who live in nursing homes and other chronic care facilities; those suffering from rare diseases, and major illness/injury; healthcare and public health professionals; poultry and swine workers and animal disease control personnel; and children from six months of age until fourth grade. The plan is intended to protect the health of high-risk groups and reduce medical expenditures.

Table 4-1 Immunization Schedule

Age	Vaccine
Within 24 hours after birth	• HBIG, 1 dose[1]
	• Hep B, 1st dose[2]
After 24 hours after birth	• BCG, 1 dose
1 Month	• Hep B, 2nd dose
2 Months	• Five-in-one vaccine (diphtheria, tetanus, pertussis, haemophilus b, and polio), 1st dose[3]
4 Months	• Five-in-one vaccine (diphtheria, tetanus, pertussis, haemophilus b, and polio), 2nd dose
6 Months	• Hep B, 3rd dose • Five-in-one vaccine (diphtheria, tetanus, pertussis, haemophilus b, and polio), 3rd dose.
12 Months	• MMR, 1st dose • VAR, 1 dose
15 Months	• JE, 1st and 2nd doses (spaced 2 weeks apart)[4]
18 Months	• Five-in-one vaccine (diphtheria, tetanus, pertussis, haemophilus b, and polio), 4th dose
27 Months	• JE, 3rd dose
First Grade	• Tdap, 1 dose • OPV, 1 dose • MMR, 2nd dose • JE, 4th dose

Notes: 1. If mothers are carriers of highly infectious hepatitis B virus, their babies should be given one dose of hepatitis B immunoglobulin immediately after birth and not later than 24 hours.
2. Since May 2011, the first dose of hepatitis B vaccine is now given soon within 24 hours after birth instead of 2-5 days after birth.
3. Immunization of the 5-in-1 vaccines as a routine for young children was initiated in March 2010.
4. The first dose of Japanese encephalitis vaccine in given 15 months after birth; the second dose is given two weeks later, and the third dose a year later.

Figure 4-5 Immunization Coverage Rates for Young Children, 2010



Note: HBV2, HBV3, OPV3 are for cohorts born between January 1 and December 31, 2009; DPT4, OPV4, MMR1, JE2 are for cohorts born between January 1 and December 31, 2008; and JE3 is for cohorts born between January 1 and December 31, 2007.
Source: National Immunization Information Management System (data downloaded in January 2011).

An application and review system for the relief fund of victims of immunization was set up by the government to offer adequate relief.

Section 2. Development and Manufacturing of Serum Vaccines

1. Production of Biological Products

1) Antivenin serum is manufactured by using horse serum. A total of 338.4 liters of antivenin horse serum were produced in 2010.
2) A supply of vaccines, toxoids, and antivenoms, totaling 1,738,134 biological products, were manufactured in 2010. Revenue of these biological products totaled more than NT$58.5 million.
3) Animals for experiment such as mice, guinea pigs, rabbits, poisonous snakes and ferrets are supplied and raised.

2. Development of Bio-Products

1) The DOH established a viral seed bank of four H1N1 influenza vaccine strains and three homegrown flu vaccine strains, as well as completed mass production of a prototype vaccine. Additionally, the homegrown flu vaccine could be mass produced and effectively induce a high-titer antibody.
2) The DOH conducted research on snake farm management in order to raise the quality and quantity of farmed poisonous snakes and increase the production of venom used to create antivenom. The DOH also developed an enzyme-linked immunosorbent assay (ELISA) technique to raise the accuracy of testing the antivenom serum titer for Taiwanese cobra.
3) The Taiwan Centers for Disease Control implemented its plan to build a facility to house horses, which will be used to produce horse serum. This is the first such facility in Taiwan being constructed in accordance with cGMP (current good manufacturing prctices) guidelines for pharmaceutical production. The construction began at the end of December 2010, and is expected to be completed at the end of 2011.

V

Management of Food and Drugs

Since Taiwan joined the WTO in 2002, its increasing international trade in food and drugs as a result of market liberalization has brought new administrative challenges. In 2010, the DOH merged its Bureau of Pharmaceutical Affairs, Bureau of Food Safety, Bureau of Food and Drug Analysis, and Bureau of Controlled Drugs into the Taiwan Food and Drug Administration (TFDA) so as to help protect consumer health, give a single regulatory body full responsibility over food and drug safety, and raise administrative efficiency. The major focuses of the TFDA include bolstering safety management of food and drugs (as well as the safety management of their sources), providing real-time consumer safety information, enforcing prohibitions on illegal drugs, preventing drug abuse, advancing international regulatory harmonization, and raising the quality of domestic products.

Chapter 1. Consumer Protection

In terms of administering food and drugs, the DOH is committed to strengthen communication with consumers and the media. It aims to promote transparency; provide timely, professional and accurate information so as to boost consumer trust and confidence; and integrate administrative resources from various government agencies so as to eliminate the sale of illegal drugs and false advertising.

Section 1. Consumer Information

1. On June 30, 2011, the original seven websites of food information, drug information, consumer's information, anti-drug resources online museum, genetically modified food information, good manufacturing practices (GMP) and human tissue information was successfully merged into a "food and drug consumer information and service network".
2. Labeling of Nutrition

   To help consumers make informed choices when purchasing food, the DOH has put in place a nutrition labeling system for prepackaged food products. On November 29, 2010, the "Guidelines for Nutrition Labeling of Prepackaged Vitamin and Mineral Products in Tablet or Capsule Form" were announced. They will go into effect on April 30, 2012.

Section 2. Cracking Down on Illegal Food and Drugs

1. Program to Crack Down on Counterfeit and Substandard Drugs

1) The Executive Yuan launched its "Program to Crack Down on Counterfeit and Substandard Drugs" in March of 2010. To carry out this program, a joint task force was created, comprising members of the DOH, Ministry of Justice, National Police Agency of the Ministry of the Interior, Directorate General of Customs of the Ministry of Finance, National Communications Commission, Government Information Office and Coast Guard Administration of the Executive Yuan, as well as various local government agencies. The illegal drugs that were seized included counterfeit and substandard drugs, as well as adulterants in health food products and prescriptive Chinese herbal medicines. Between January and March 2010, there were per-month averages of 190 violations discovered and 43 cases prosecuted. Between April 2010 and June 2011, after the task force was formed, there were per-month averages of 306 violations discovered and 202 cases prosecuted—a growth of 160% and 470% respectively. It is evident that interdepartmental collaboration can have a positive effect in cracking down on illegal drugs.

2) From April 1, 2009 to March 31, 2010, before the task force was formed, a total of 1,837,000 illegal pills were confiscated, whereas from April 1, 2010 to June 30, 2011, after the task force was formed, a total of 11,519,000 illegal pills were confiscated. That increase represents a growth of 620%.

3) From the action on illegal drugs from pharmacies, drug stores, online stores, night markets and roadside vendor, the TFDA laboratory testing found that 21% of seized articles were either fraudulent or of inferior quality. Among those, 53% contains drug ingredient for male sexual enhancement, and 29% of weight loss medicine.

4) From January to June 2011, the TFDA received 1,722 specimens and completed testing on 1,385 of them. Table 5-1 presents a summary of the laboratory testing results.

2. Efforts from the investigating and prosecution office

In compliance to the 13th meeting resolusion of the interdepartmental joint task force on fighting non-violence economic crimes, 362 articles were confisticated by the district prosecutor offices according to the program to crack down on illegal drugs and health food supplements sold through radio and TV shopping channels in January to June, 2010. Among them, 243 of the articles were tested by the TFDA. The test results are summarized in Table 5-2.

3. Cleaning up illegal advertising

The DOH requested that the National Communications Commission and the Government Information Office, upon receiving disciplinary citations from local public health agencies, take administrative actions to stop illegal advertisemenets from running. Statistics show that reported violation rates for drug, cosmetic, and food advertisements dropped from 13.9% in January 2010 to 5.2% in June 2011.

Section 3. Food Contamination Incidents

1. On April 7, 2011, the DOH and local public health agencies detected plasticizer DEHP in the probiotic powder produced by Anncare Bio-tech Center. This happened while testing consumer products as part of a joint task force aimed at cracking down on counterfeit drugs. In response, the DOH took the following measures:

1) The DOH ordered that the manufacturers recall the product immediately and traced the source of the DEHP back to the clouding agent produced by Yu-Shen Chemical Co. The DOH then asked investigating and prosecuting agencies to help track down purchasers of Yu-Shen's clouding agents. It also issued a press release.

2) On May 26, DINP, another type of plasticizer, was found in the clouding agent produced by Pin-Han Perfumery Co. The DOH started another round of investigations.

3) Many types of phthalates are used as plasticizers and added to plastic products. Nevertheless, it is illegal to use them as food additives. The plasticizer scandal has caused huge media and public concern. From May to June 2011, there were a total of 1,564 articles addressing this incident in Taiwan's newspapers (1,378 that were favorable or neutral about the DOH's handling of the crisis and 186 that were unfavorable). Furthermore, the DOH's consumer hotline received 23,000 phone calls during the same period.

4) The two companies (Yu-Shen Chemical Co. and Pin Han Perfumery Co.) involved in the scandal sold their clouding agents to eight wholesalers, who in turn supplied fruit-flavored powder, yogurt powder, fruit syrup and jam concentrates with these clouding agents added to 186 food manufacturers. Consumer products contaminated included sports drinks, fruit juices, and health supplements in capsule, tablet and powder forms, a total of nearly 1,000 products from 229 manufacturers. All products may have been contaminated were recalled immediately. Beginning in June, products confirmed to be contaminated were destroyed. By July 29, all recalled products

were destroyed except for those being kept as evidence in judicial or administrative proceedings.

5) On June 13, the Changhua District Prosecutors Office charged four persons (the proprietors of Yu Shen Chemical Co. and Ching-tung Co.) with fraud and for violating the Food Sanitation Act. The prosecutors sought 15 to 25 years imprisonment for the four and fines of NT$200 million and NT$100 million on the two companies respectively.

2. Impacts of the incident

1) Impact on the image of food from Taiwan: Because of the large number of tainted food products, public trust in the manufacturers involved and the products they produced was affected.

2) Impacts on food industry production: On June 10, 2011, former premier Wu reported to the Legislature on the impacts of the plasticizer incident on the domestic food industry. He estimated the cost of the incident would be NT$9.2 billion of lost GDP (the projected food industry production value for the year was NT$93.3 billion). Types of food products affected included health food, tea and other non-alcoholic beverages, fruit and vegetable juices, etc. To bolster management oversight of the food industry, the Ministry of Economic Affairs announced that five categories of food and beverage products would require source-certification documentation before being allowed to be exported.

3. Government actions

1) Activating emergency response mechanism: The Executive Yuan immediately established an inter-departmental taskforce to track down contaminated products, to evaluate

Table 5-1 Testing Results of Drugs Seized by the Joint Task Force between January and June 2011

Category	No. of Samples submitted (piece)	No. of Samples tested (piece)	No. of Samples found to be fake (piece)	Percentage of fakes (%)
Pharmaceutical products	219	113	68	60%
Food	1,437	1,160	228	20%
Chinese medicines		46	13	28%
Cosmetics	66	66	11	17%
Total	1,722	1,385	320	23%

Table 5-2 Testing Results of Drugs Seized by Prosecution Offices between January and June 2011

Category	No. of Samples submitted (piece)	No. of Samples tested (piece)	No. of Samples found to be fake (piece)	Percentage of fakes
Pharmaceutical products	67	60	53	88%
Food	278	134	24	18%
Chinese medicines		32	8	25%
Cosmetics	17	17	13	76%
Total	362	243	98	40%

the extent of the impact, and to direct local public-health agencies to recall all potentially contaminated products. It also called daily taskforce meetings and working-group meetings to review how the investigations were progressing.

2) Information transparency:
   a) Websites of the DOH and the TFDA alike set specific areas to provide information about health-risk assessments and all food recalls, as well as Q&A sections. All information is continually updated.
   b) Bulletins were sent to 22 countries and regions that might have imported the contaminated products. Communications were also done to all foreign diplomatic offices or trade offices in Taiwan.
   c) Press releases were issued every day to provide updates on current developments.
   d) A special hotline number (with a total of 20 lines) was established to answer questions about this matter from the general public. The DOH personnel staffed the hotline from 7 a.m. to 11 p.m.
3) The government announced the following measures to deal with the issue: On May 28, the government announced that any clouding agent containing products falling into the categories of "sports drinks," "juice beverages," "tea beverages," "jam, syrup and jelly," or "health supplement in the form of capsule, tablet, or powder" must present a safety verification (either a certificate detailing the sources of their clouding agent suppliers or a laboratory testing certificate from a DOH-approved laboratory). Any products without any of these certificates would be pulled from shelves at midnight on May 31 (D-day).
4) Agencies responsible for public health, investigation and prosecution, and consumer protection jointed forces: Beginning on May 31, these agencies conducted random inspection and testing at all food retailers to ensure that no tainted food products were for sale. These agencies also requested retailers to verify the safety of all food products on their shelves falling into the five aforementioned categories. By July 19, 49,652 retail outlets had been inspected, and 29,337 food products had been pulled from shelves of 4,076 grocery stores and supermarkets. Those agencies also checked the safety verification documentation presented by the four major convenience store chains in Taiwan.
5) Mobilizing laboratories: 49 laboratories with testing capabilities (both public sector and private sector) were mobilized to conduct up to 3,000 tests for plasticizers per day.
6) Risk communication and health-counseling services: The government integrated resources and channels from various agencies to communicate with the public about health risks, and brought together some 150 hospitals to provide health-counseling services.

4. Other related measures

1) Increasing penalties as a deterrent: Articles 31 and 34 of the Food Sanitation Act were amended to raise fines—putting them in a range between NT$60,000 and NT$ 6 million. For products containing illegal food additives that are detrimental to human health, the penalty was raised to a fine of NT$10 million and imprisonment of not more than seven years. These amendments were passed by the Legislative Yuan on June 10.
2) Strengthening source management: The Environmental Protection Administration (EPA) amended the Regulations Governing the handling and Release of Toxic Chemical Substances. To tighten control over the flow of toxic substances, the amendment mandates the keeping of daily records and monthly reports on the handling of Class 4 toxic chemical substances. In addition, the EPA also planned to strengthen control over phthalate esters (PAEs).
3) In June of 2011, a national conference on food safety was convened to elicit suggestions for

an overhaul of how the nation was overseeing the food and food additives industry.

Chapter 2. Safety Management of Food

Food begins with agricultural production and reaches consumers' tables after processing and distribution. The government's role in this process is to regulate sources and distribution so as to ensure food safety and protect public health.

Section 1. Source Management

1. **Revising food sanitation standards:** In 2010, revisions were made to the residue limits of 209 pesticides in food and also to the application standards and scope of uses for 245 food additives. These revisions were made to ensure food safety and to bring our food regulations in line with international norms.
2. **To strengthen the management of imported food:**
   1) In accordance with the Regulations Governing Inspection of Imported Foods and Related Products, any imported live, fresh, or chilled sea food that fails inspection will be pulled from the shelves, and the same kind of food will subject to a higher random inspection rate (20% and up). Additionally, the agency will immediately post the names of those failed food products on the DOH food information website. Between 2010 and June 2011, 266 food items have been posted on the website and the products that failed to conform to ROC food regulations are prohibited from further importation.
   2) The TFDA checks on line daily for international food safety information to ensure that no unsafe products are being imported to Taiwan. From 2010 to the end of June 2011, the agency found 122 international food safety alerts. Furthermore, the agency found product import records of 12 items that bore the same product names and immediately conducted verifications with the local public health authorities. Food products from the same problem lots were recalled immediately and products from different lots were allowed to enter the market after passing laboratory testing. In all, 12 items were recalled.
   3) For those categories of imported foods that fail sample inspections repeatedly, inspection frequencies have been raised to be between 20% and 50%. Between 2010 and June 2011, 953 batches of the aforementioned products were tested and 14.9% of those that were tested failed. See Table 5-3.
   4) To ensure the safety of imported food, and to unify controls over imported food at the border and in the market, in 2011 the DOH took back direct control over the imported food border inspection program. The DOH previously commissioned the Bureau of Standards, Metrology and Inspection of the Ministry of Economic Affairs to operate this program. In 2010, the DOH established an automated management information system for border inspections of food imports, trained personnel for this program, and commissioned private laboratories to carry out food import inspections. In addition, it established offices in all major ports of entry (Keelung, Taipei, Taoyuan, Taichung and Kaohsiung). These started operations in 2011. Table 5-5 is a summary of the inspection results from January to the end of June 2011.
   5) The DOH strengthened the management of imported food, and launched control measures targeted at the import of beef, namely the “Three Controls and Five Verifications”. The so-called Three Controls pertain to the security control of the source of origin, the customs declaration, and the market of the imported product. Meanwhile, the so-called Five Verifications refer to the five checkpoints to ensure food safety, including the strict check-up of documents of proof, the clear labeling of product information, out-of-the-box

thorough inspection by the customs personnel, confirmation of food safety with analysis, and real-time information connections for sound verification.

6) In August 2010, a team consisting of experts and scholars, as well as officials from the DOH and the Bureau of Animal and Plant Health Inspection and Quarantine of the Council of Agriculture, went to the US to conduct on-site inspections of six slaughterhouses that export beef to Taiwan. The purpose of the trip was to ensure that all US beef exports meet Taiwan's food sanitation and safety regulations. Over 50% of all US beef exports to Taiwan come from these six inspected facilities.
7) In 2010 and 2011, the DOH reviewed applications to import poultry from Peru, pork from Poland, pork and beef from Mexico, pork from Spain, and pork from Austria. All applicant countries were asked to submit more information. In 2010, the DOH also reviewed applications to reopen the Taiwan market to beef from Japan, Holland and Canada. After much discussion by Taiwan's Bovine Spongiform Encephalopathy Advisory Committee, the DOH asked Holland and Canada to provide more information for follow-up risk assessments.

3. Food sanitation management

1) Promoting Hazard Analysis and Critical Control Points (HACCP) systems:
   a) Apart from following good hygienic practices (GHP), beginning on September 15, 2010, boxed lunch factories were required to have a HACCP program in place.
   b) Beginning in September 2009, to construct a safe environment for diners, the DOH put in place a HACCP sanitation evaluation system and awarded qualified establishments with an insignia of excellence. In 2010, a total of 197 establishments passed muster and received certification, including 140 meal manufacturers and 57 restaurants.
2) In 2010 the DOH provided guidance to representative tourist night markets in northern, central and southern Taiwan. A total of 46 eateries conformed to its requirements.
3) To strengthen its monitoring of food poisoning, the DOH has, apart from conducting random inspections of restaurants, established an integrated information system and a communication channel between the TFDA and the Centers for Disease Control in order to quickly get a handle of investigation and inspection results so as to raise efficiency in dealing with food poisoning cases.
4) Starting January 1, 2011, any food product in the form of tablet or capsule produced domestically with any vitamin additive whose daily intake is 150% over the dietary reference intake and below the upper limit of what is prescribed in the Scope and Application Standards of Food Additives should be registered for inspection.
5) Starting from December 31, 2007, a two-tier system was adopted for health food registration. The first tier focuses on reviewing individual applications. The second tier focuses on whether the food conforms to the health-food specification standards of the DOH. As of the end of June 2011, 200 permits had been issued.
6) “Special dietary foods” refers to foods such as infant formula and follow-up infant formula as well as foods for medical purposes. All foods that fall into these categories shall obtain approval from the DOH. In 2010, registrations were completed on 31 items; changes were made to the registrations of 58 items; registrations were extended on 30 items; registrations were cancelled on two items; sample requests were made for 20 items; and 23 food products for patients with rare diseases were imported.
7) Management of Genetically Modified Food:
   a) In accordance with the Guidelines for Food

Safety Assessment of Genetically Modified Foods and Guidelines for Food Safety Assessment of Genetically Modified Plants with Stacked Traits, genetically modified foods are given permit after approval; the implementation of the labeling system was also practiced. As of June 2011, 22 carrying a single trait and 22 stacked lines had been approved.

b) The DOH continues to conduct relevant investigations and inspections and immediately notifies local public health agencies to take appropriate actions upon the discovery of genetically modified products in violation of the ROC laws.

8) Management of plastic food containers: The amendments of the Sanitation Standards on Food Utensils, Containers and Packages on November 22, 2010 listed DEHP, DBP, PLA, PC (excluding milk bottles), and milk bottles made of PES or PPSU as controlled substances. The amendments also set the upper limit of BPA migration level. Additionally, a website was established to provide information about plastic food containers and how to use them safely.

9) Strengthening controls over vacuum-packed ready-to-eat food: In 2010, there were eight reported outbreaks of botulism food poisoning. 11 people were affected by this poisoning and one of them died. Subsequent testing showed that botulinum toxin type A was responsible for six of the outbreaks and type B and E were responsible for one

Table 5-3 Imported Food Items Subject to Higher Frequency of Tests between 2010 and June 2011

Items	Number of batches	Number inspected (batches)	Number rejected (batches)	Nonconformance Rate (%)
Japanese green tea	184	94	23	24.47
Chrysanthemums from China (including Hong Kong and Macau)	62	21	8	38.10
Red-yeast rice from China (including Hong Kong and Macau)	111	17	4	23.53
Candies from Indonesia	741	211	39	18.48
Food seasonings from the Philippines	538	62	4	6.45
Food seasonings from Vietnam	950	106	29	27.36
Processed bamboo shoots from Vietnam	101	49	6	12.24
Apples from South Korea	544	98	11	11.22
Peaches from Japan	383	123	6	4.88
Kumquats from Japan	157	50	5	10.00
Peanut brittles from Vietnam	282	122	7	5.74
Total	4,053	953	142	14.90

Table 5-4 Imported Foods Inspections

	Number of batches	Total net weight (kg)	Number inspected	Inspection rate (%)	Number rejected	Nonconformance Rate(%)
Total	203,896	1,821,820,589	13,067	6.41	133	1.02

Statistics for January 1 to June 30, 2011

outbreak each. To bolster management, apart from requiring the food industry to enforce cold chain management and commercial sterilization, the DOH announced the Sanitary Standards for Vacuum-Packed Food and the Related Regulations Governing Commercial Vacuum-Packed Food Labeling on October 14, 2010. In addition, the DOH also amended the Sanitary Standards for Canned Foods and drafted the Regulations Governing the Certification of Vacuum-Packed Food, the Regulations Governing the Use of a Food Certification Logo on Vacuum Packed Food, and the Registration Requirement for Vacuum-Packed Ready-to-Eat Soybean Food.

10) Food-labeling management
   a) On May 28, 2010, the DOH announced the Instant Noodle Labeling Guides. Beginning on July 1, 2011, all instant noodles packaging is required to provide a truthful statement of identity and a disclaimer if any food depicted visually is not actually included inside.
   b) On June 1, 2010 the DOH revised its "Labeling Principles for Fresh Milk, Long-Life Milk and Flavored Milk." Beginning on March 1, 2011, food labels of the aforementioned products are required to declare the countries of origin of ingredients in the order of ingredient weights.
   c) On July 26, 2010, the DOH announced that packaged food products were required to indicate country of origin on the exterior package. Beginning on March 1, 2011, packaged food products were required to declare the countries of origin of ingredients in the order of ingredient weights.
   d) The DOH announced the "Commercially Prepackaged Oil Blend Product Identity Labeling Guidelines" on September 21, 2010. The guidelines stipulate that the statement of identity on the package must declare the oil or oils whose contents in the blend are higher than a specified level (only one or two kinds of oil can be used in the product name).
   e) The DOH formulated the Labeling Principles for Whole Grain Products on September 10, 2010. Beginning on July 1, 2011, all packaged instant noodles are required to provide a truthful statement of identity and a disclaimer if any food depicted visually is not actually included inside.

Section 2. Logistics Management

In order to bolster food safety, the DOH implements post-market surveillance programs to oversee foods sold through physical and online stores; mandates country-of-origin labeling for imported beef and bulk food items and conducts on-site inspection for compliance; and promotes food traceability systems to provide consumers with a wide spectrum of transparent product information.

1. **Food sanitation management:** Every year, the DOH works with local public health authorities to implement food surveillance programs, in which private laboratories are commissioned to conduct laboratory testing. Food items that fail inspection are subject to administrative resolution, follow-up inspections, and tighter source management. Between 2008 and 2010, the DOH carried out the Post-market Surveillance. See Table 5-5 for a summary of the results.
2. **Online food sanitation and safety management:** In 2010, the DOH inspected various production facilities making moon cakes, the top ten food products sold online to groups in bulk, and hot pot ingredients. The facilities of two moon cake and two online food producers were found to be unsatisfactory. After improvements were made, they all passed follow-up inspections.
3. **Beef labeling inspection program:** The DOH requested local public health authorities to provide assistance to their local restaurants in declaring the country of origin of their beef on their menu,

beginning in March 2010. It also requested all food businesses to post the country of origin of their beef, set up a special area for beef, manage their sources, make voluntary inspection, and publicize what information they have. A summary of results as of July 2011 follows:

1) 5,314 supermarkets selling loose packaged beef were inspected. 4,716 of them passed. The pass rate was 88.7%.
2) 3,260 food stalls were inspected. 2,568 of them passed. The pass rate was 78.8%.
3) 10,357 restaurants were inspected. 8,811 of them passed. The pass rate was 85.1%.

4. **Promotion of food traceability systems:** Between 2007 and the end of 2010, food traceability systems had been set up for 17 dairy products, 11 bottled water brands, 5 beverages, 2 chilled prepared foods, 3 frozen foods, 10 cooking oils, 5 cereals, 3 processed meats, 5 food seasonings, one honey brands and 2 health foods. There were a total of 64 products and 14 industry models. On the TFDA's website (http://tfts.firdi.org.tw), consumers can check data about the raw materials used for these products, testing results, and processing controls, as well as testing results about the finished product and other related information.

Chapter 3. Managing Drug and Cosmetics Safety

The main focus of drug safety management is to ensure the safety, effectiveness and quality of drugs, so as to protect the safety of the general public. Via risk-management control mechanisms, Taiwan has developed comprehensive management strategies, which have led to legal regulations and a coherent set of related measures that guide the entire pharmaceutical process from research and development at the manufacturer's end all the way to the consumer's end, so as to ensure that products are of high quality and safe to use. Taiwan has also constructed a reasonable, transparent and rigorous inspection environment.

Section 1. Monitoring Safety and Quality at the Manufacturing Site

1. The DOH has been continuing to promote the implementation of the PIC/S (Pharmaceutical Inspection Convention and Pharmaceutical Inspection Co-operation Scheme) Guide to Good Manufacturing Practices (GMP) for Medicinal Products. There are 164 domestic manufacturers of western medicines in Taiwan, and 24 of them had been inspected and approved that its manufacturing activities are fully complying with the PIC/S GMP standards at the end of June 2011. What's more, from 2002 until the end of June in 2011, TFDA had conducted 176 overseas inspections on foreign pharmaceutical manufactures, and 152 of them passed those inspections.
2. Enhance international cooperation - PIC/S Membership Application: On June 14, 2010, the TFDA, representative of DOH, submitted the PIC/S membership application. The first phase of PIC/S accession procedure (dossier review and evaluation) had been completed in 2011.
3. The DOH has continued to promote GMP assessments of manufacturers of medical devices. From the beginning of 2010 until June 2011, the DOH received 2,051 GMP/ QSD (quality system documentation) applications and completed audits on 985 of them. By the end of June 2011, 480 (or 15%) had registered for GMP certification, whereas 2,721 had registered for QSD certification (or 85%).
4. From 2008 to July of 2011, 34 manufacturers applied for GMP certification. Among those, 17 have received that certification.
5. There has been an all-out embrace of GMP standards by Taiwan's manufacturers of Chinese medicine, with 116 domestic Chinese medicine manufacturers receiving GMP certification by the end of June 2011. These manufacturers require yearly follow-up compliance inspections. From the beginning of 2010 until June 2011, 84 of them passed follow-up compliance inspections.

Section 2. Pre-Market Control of Drugs

1. **Establishing a unified pharmaceutical inspection system:** Beginning in 2010, so as to raise inspection efficiency, the DOH integrated the professional inspection capabilities of the Food and Drug Administration, the Center for Drug Evaluation and related advisory bodies.
2. **Pre-market registration:** Data on pharmacological and toxicological testing, as well as PK/PD/BA/BE (pharmacokinetics/pharmacodynamics/bioavailability/bioequivalence) testing and clinical trials are reviewed to ensure drug effectiveness and safety. Generic drugs undergo bioequivalence testing in place of clinical or non-clinical trials. By the end of June 2011, a total of 27,353 pharmaceuticals had received certification, including 2,398 as active pharmaceutical ingredients (API) and 24,955 as drug products.
3. **Registration and market approval of medical devices and medicated cosmetics:** Medical devices in Taiwan are divided into three categories based on their potential risk. At the end of June 2011, licenses for 31,178 medical devices and 14,242 medicated cosmetics had been issued.
4. **Strengthening regulations over concentrated preparations of traditional Chinese medicines:** On May 28, 2010, revisions were announced to the rules governing permissible levels of harmful substances in concentrated preparations of traditional Chinese medicines. These went into force on July 1, 2010.

Section 3. Post-Market Management

1. **Strengthening Drug Safety Surveillance**
   1) A platform of near real-time surveillance and drug safety communications was developed by DOH in 2011 to provide the healthcare professionals and the public with easy access to important drug safety information and alerts. 148 messages regarding international and domestic drug safety information have been monitored, further 16 drug alerts and 10 drug safety communications have been issued instantly by the end of June 2011.
   2) In 2011, the development of post-market risk management program specifically to those high-risk medicines in reference to those developed in the USA and European facilitates the improvement of manufacturer's own risk management system and strengthens the cooperation between DOH and manufacturers.

Table 5-5 Post-market Surveillance Summary between 2008 and 2010

Program	Year	Total samples	Satisfactory results	Percentage of satisfactory
Pesticide Residues in Commercial and Package Plant Agricultural Products	97	1,765	1,557	88.2%
	98	1,894	1,696	89.5%
	99	2,051	1,856	90.5%
Veterinary Drug Residues in Foods	97	252	232	92.1%
	98	266	252	94.7%
	99	330	324	98.2%
Heavy Metals (cadmium, mercury and lead) Content in Rice	97	161	161	100%
	98	161	161	100%
	99	161	161	100%

3) In July of 2011, the DOH upgraded spontaneous adverse drug reaction reporting system with friendly reporting online. It provides the single reporting window and data sorted to different database for further coding and signal detection. The reports related to vaccines, drugs, medical devices and clinical trial produces will be separated into independent databases. Meanwhile, a function of signal detection is also introduced into this system to widely broad the application of spontaneous reporting system database.
4) To establish a source management mechanism for Chinese herbal medicine, the DOH began by promoting package labeling. In May and December of 2010, the DOH conducted a series of joint taskforce inspections on Chinese herbal medicine labeling. Among the 442 samples checked, 98.9% were found to be in compliance with regulations.

2. Drug Quality Surveillance

1) From the beginning of 2010 until June of 2011, the DOH's drug-quality surveillance system received 1,177 reports about defective drugs. From 2003 until the end of June 2011, there were 1,265 reports about poor-quality medical devices. And from the beginning of 2010 until the end of June 2011, there were 60 reports about poor-quality cosmetics.
2) Strengthening quality and safety surveillance of drug products on market, the DOH established an information sharing platform for public health institutions. The platform allows local public health agencies to get a handle on information about product recalls and medical products defects, thereby avoiding duplicate testing and raising inspection efficiency.
3) On December 17, 2010 the DOH's Food and Drug Administration became a participant in the National Competent Authority Report (NCAR) exchange program under the Global Harmonization Task Force (GHTF). This has facilitated the TFDA to receive recall notifications, safety alerts, hazard alerts, product notifications and other product advisories from other member nations. This information can help the DOH to ensure consumer safety and help the ROC in bringing its medical-device safety controls up to international standards.

3. Investigating Illegal Drugs and False Drug Advertising

1) Implementation of the 2010 joint inspection program of illegal drugs, cosmetics and food products: Places inspected under this program included markets, street stalls, martial-arts studios, folk-therapy treatment sites, chiropractic clinics, traditional Chinese medicine clinics, pharmacies, Chinese herbal apothecaries and so forth. The 2010 program aimed to crack down counterfeit and banned drugs and unlicensed pharmacists, inspect drug labeling for both western and Chinese herbal medicine, and test samples for quality. Among a total of 257 inspections, there were 24 instances of violations.
2) The DOH tested samples of Chinese herbal medicines for adulteration: A total of 124 samples have been taken. Between 2010 and the end of June 2011, testing was completed on 118. Among those tested, 116 passed and two were determined to illegally contain pharmaceutical products. Another six are awaiting testing results. In the case of violations, the DOH has informed local public health agencies to take punitive measures.
3) From the beginning of 2010 until the end of June 2011, there were 4,059 drugs busts, for which charges were filed in 1,241 cases.

Jurisdiction was transferred to the courts in 175 instances. Administrative penalties were taken in 1,069 instances, with fines totaling NT$66.734 million.

4) The following is a summary of results for a monitoring program for false advertisements in print media between 2010 and June 2011 (See Table 5-6)

4. Drug hazards relief: In the world there are only three nations that Competent Health Authority enacts the Law for providing timely relief to patients harmed for serious adverse drug reactions from the proper usage of legal drugs. The Drug Hazards Relief Act was enacted on June 2, 2000. It provides timely relief to those who, after taking legal drugs with proper use, have a serious adverse drug reaction that leads to hospitalization or prolong existing hospitalization, disabilities or death. As of December 31, 2010, the DOH had reviewed drug injury relief applicants about 1,228 cases (See Figure 5-1.) Of those, there were 623 cases (50.73%) qualified for timely compensated. (See Figure 5-2.)

Section 4. Controlled Substance Management

To control the flow of controlled substances (drugs) in Taiwan, the DOH has established a drug control system, including different levels (or "schedules") of control, certification procedures, and audit and approval systems.

1. Control system for medicinal controlled drugs

1) Controlled substances are placed on one of four schedules in accordance with their potential for creating a habit, dependency, abuse, and danger to society. On April 2, 2010, the Executive Yuan reclassified brotizolam from Schedule 3 to Schedule 4. On July 29, 2010, it classified mephedrone (also known as 4-methylmethcathinone or 4-MMC) to Schedule 3 controlled substances list. On January 14, 2011, it classified 5-methoxy-N (also known as foxy methoxy) and thiamylal sodium (trade name: Citosol) to Schedule 4 controlled substances list.
2) On January 26, 2011, amendments to the Controlled Drugs Act were promulgated. The amendments stipulate what administrative agencies may determine and announce, revise the qualifications for controlled substance managers and the control measures over controlled substance registration licenses, and corporatize the TFDA's pharmaceutical plant.
3) Management of controlled substance licenses: Using schedules 1-3 controlled substances requires a prescription license. At the end of June 2011, 13,486 businesses or institutions held controlled substance registration licenses and 43,157 doctors, dentists, veterinarians and veterinarian assistants held controlled substances prescription licenses.
4) Controlled substances audit:

The manufacture, import, and export of controlled substances, as well as the use of controlled substances in medical or educational research, all require approval from the authorities in charge. From the beginning of 2010 until June of 2011, the DOH issued 2,832 licenses and performed 21,753 on-site inspections. Violations were found at 259 facilities, constituting a 1.19% rate of violations.

2. Drug-abuse prevention:

1) The "Anti-Drug Web" of the "Food and Drug Consumer Information Network," provides information to the public about harms from drug abuse.
2) The DOH has continued to assist and recruit medical care institutions to participate in Drug Abuse Reporting System.
3) To provide a case number of substance abuse as well as inspection statistics for reference of relevant unit, the DOH surveys amount of drug arrests and statistics of controlled substance abuse every month.
4) The DOH continues to provide information about drug abuse through publishing

quarterly journal of controlled substances; to work with NGOs to expand its educational and promotional resources; to train local pharmacists to provide consultations; and to ramp up its efforts during summer vacation to promote drug-abuse prevention among the youths.

3. **Drug Testing System:** The DOH delivers drug testing samples to drug laboratorires on behalf of hospitals, the police and public health agencies. From the beginning of 2010 until the end of June 2011, TFDA tested a total of 2,596 items. It also assisted five public hospitals with their drug testing.

Chapter 4. Testing for Foods, Drugs and Cosmetics

According to the current laws and regulations of Taiwan, the TFDA requires product registration and market approval for drugs, medical devices, medicated cosmetics, food additives, health foods and genetically-modified food. Such products can only be manufactured, imported or sold after acquiring permit or license from the TFDA. Dossiers are submitted for approval by private companies and reviewed by an expert panel. The TFDA also carries out product inspection and testing in laboratory to ensure the quality and safety of products. In addition, biological products such as vaccines, botulism toxins and blood products are batch-tested for sealing before release on the market. If an incident occurs, confirmative testing of the drugs, foods or cosmetics in question is also required.

Section 1. Laboratory Testing

In 2011, the TFDA Pesticide Residue Monitor Program surveyed 25 items either already on market or being packaged for the market: 14 types of food, 6 drugs, 3 cosmetics, and 2 medical devices. Some of the results were released to the media and published on the TFDA' s website to help consumers make informed choices. The TFDA also requested relevant government agencies to strengthen quality control and guidance efforts.

Table 5-6 Print Media Violations from 2010 to June 2011

Nature	No	Closed	Not closed	No. of Violations Confirmed	Fines
	No. of Case	No. of Cases	No. of Cases	No. of Cases	Unit: NT$10,000
Chinese medicine	15	15	0	8	30
Western medicine	54	54	0	46	191
Chinese pharmacy	5	5	0	4	0
Western pharmacy	65	65	0	54	85
Foods	1,214	1,112	102	1,085	2,799
Cosmetics	2,472	1,801	671	1739	2,790.2
Medical devices	34	33	1	31	189
Unknown	0	0	0	0	0
Beauty and weight-control	3	2	1	0	0
Others	33	28	5	13	107
Total	3,895	3115	780	2,980	6,107.2

Note: "Violations confirmed" refers to cases that have actually been processed by the administration.

Figure 5-1 Applications to Receive Emergency Relief After Adverse Reactions to Drugs (1999-2010)

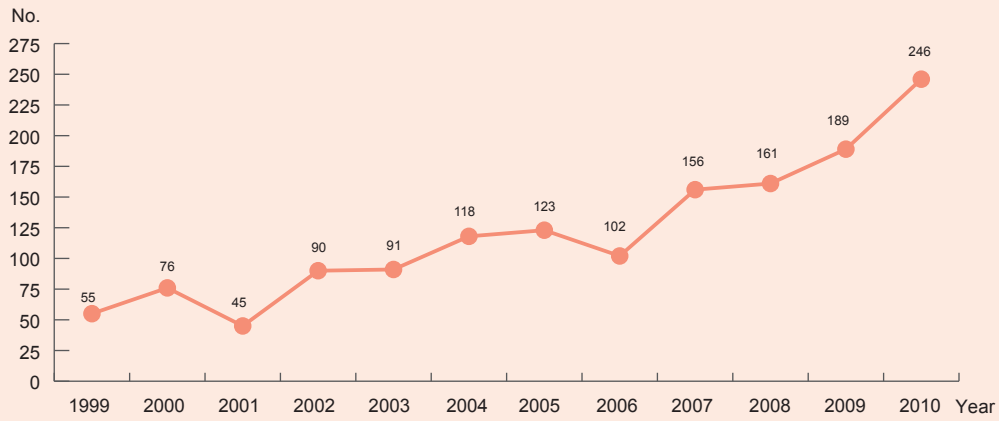
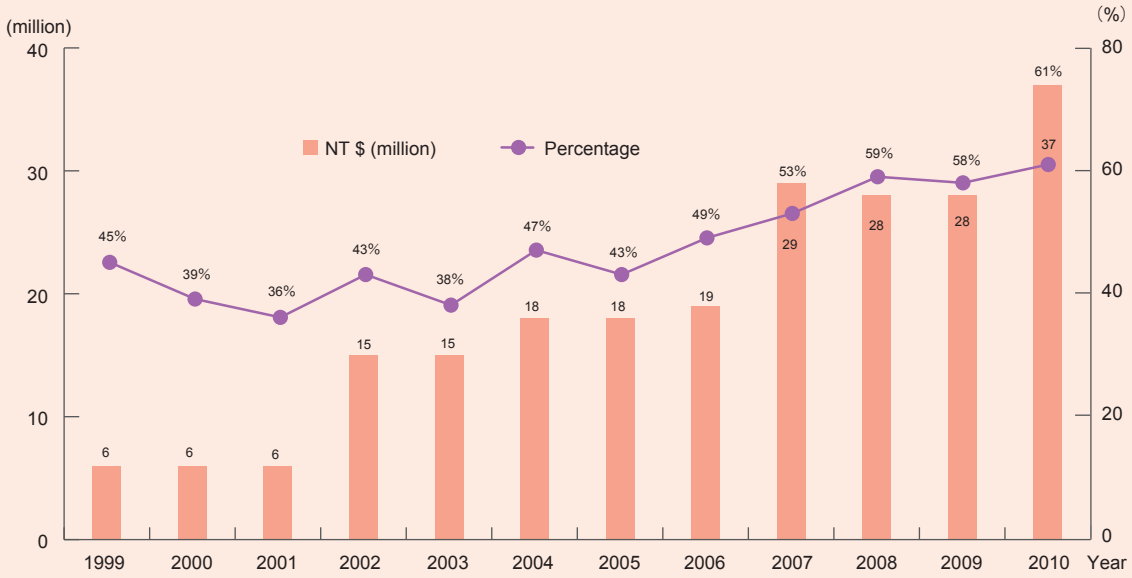


Figure 5-2 Amount and Payment Rate for Adverse Drug Reaction Emergency Relief (1999-2010)



Section 2. Quality of Laboratory Testing

The DOH continues to encourage private laboratories to be accredited. The DOH provides capability assessments in a fair, objective and independent manner in accordance with international standards and awards an accreditation logo to those who qualify, so as to ensure the accuracy and quality of testing results. By the end of June 2011, 55 laboratories had been accredited to conduct tests on a total of 478 food items, and 26 laboratories had been accredited to carry out tests on 248 drug and cosmetic items.

VI Health Care

Rapid changes in medicine, health care and the social and economic environment have presented significant challenges in ensuring that medical care systems and medical care teams provide the general public with sound and robust health care. Key issues that need to be addressed include the provision of a holistic and adequate public health care system, implementing community health care and preventive medicine, and continuously improving the people's health and quality of life.

Chapter 1. Health Care Systems

In 1985, the DOH implemented a health care network project that divided the country into 17 medical care regions with the aim to evenly allocate medical care manpower and facilities, as well as upgrade medical standards in each region. The project was implemented in four phases over a period of 20 years resulting in a steady increase in hospital bed sufficiency and improvements in the quality of medical care. In 2005 to 2008, the Department carried out the "Holistic Health Care Plan" in conjunction with a post-SARS reorganization of the medical care system. The plan emphasized patient safety, patient-centered care and the development of a community health care system. Furthermore, in response to Taiwan's aging population, falling birth rate, and changing disease patterns, the DOH is implementing a "New Generation Health Navigation Project" from 2009 to 2012 to strengthen the provision of holistic health care service founded upon suitability, proximity, comprehensiveness and sustainability to help people live longer, healthier, and happier lives.

Section 1. Medical Care Resources

The DOH established a regional medical care system in accordance with the Medical Care Act and the medical care network project to promote the balanced development of medical care resources. It also has provided regional assistance and organizational support to assess the health needs of the people, as well as carried out various plans for regional distribution of medical resources and the improvement of regional health care standards. The results of these initiatives in 2010 are as follows:

1. **Current Status of Medical Institutions:** In 2010, there were a total of 508 hospitals and 20,183 clinics, as illustrated in Figure 6-1. The number of hospitals has been declining over the years, whereas the number of clinics has been increasing.
2. **Current Status of Hospital Beds:** In 2010, there were 158,922 beds in medical care institutions (including general beds and special beds). Of them, general beds accounted for 62%. In all medical care institutions, there were 99,177 general beds (including 74,140 general beds for acute care, 3,779 general beds for chronic care, 6,932 beds for acute psychiatric care, 13,978 beds for chronic psychiatric care, 48 beds for tuberculosis care, and 300 beds for Hansen's disease). On average, there were 68.61 hospital beds per 10,000 population.
3. **The DOH conducted regular inventories of resources to promote effective utilization of hospital beds.** The "Regulations on permission and control of the establishment or the expansion of hospital" were formulated and implemented on January 25, 2010, to effectively control the addition or reduction of hospital beds in each region to safeguard the public's medical rights and interests and ensure that medical resources are efficiently utilized.
4. **Medical region assistance and resource integration:** In order to improve the quality of medical care, the DOH promoted the "Medical Region Counseling and Medical Resources Integration Plan" in accordance with the "New Generation Health Navigation Project" approved by the Executive Yuan on December 2, 2008. The plan aims to encourage medical institutions and private sector organizations to operate in line with related health policies set forth by the DOH. It also seeks to promote the autonomous development of medical specialization in each

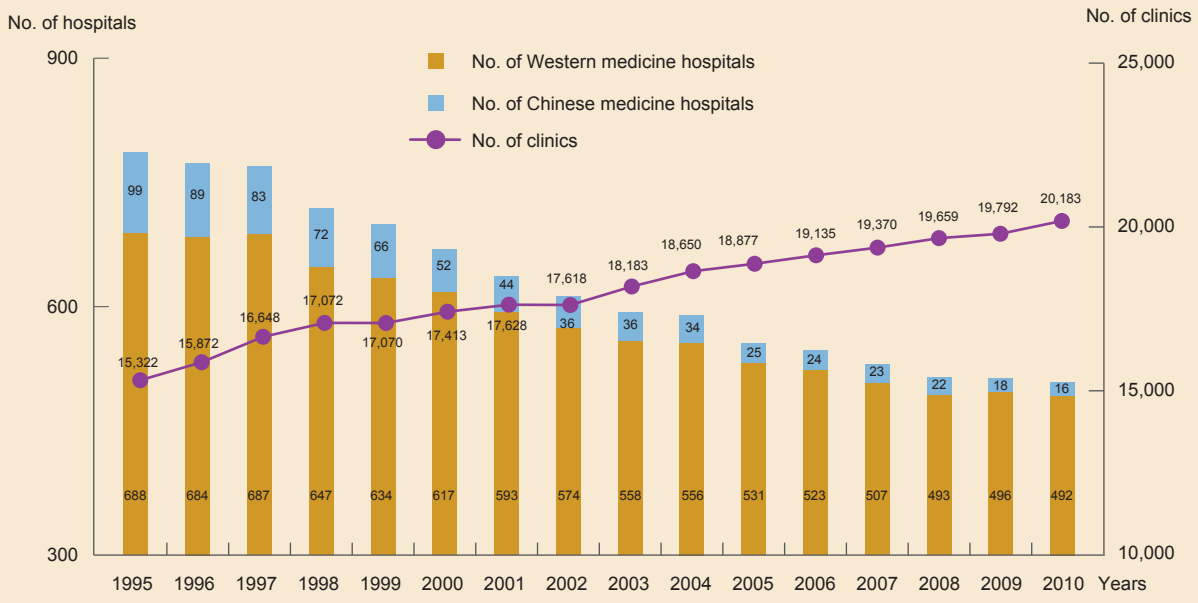
region, stimulate local innovation, and integrate the relevant resources of government units.

5. **Medical Care Development Fund:** In order to encourage medical personnel to practice in remote areas with relatively limited resources, the DOH has provided medical care subsidies to 19 regions with inadequate medical resources under the Improvement Project for Emergency Care in Resource-scarce Regions. It also encourages hospitals to execute the "Resource Integration and Quality Improvement Project for Obstetrics and Gynecology, and Pediatrics," which aims to facilitate the development of medical care, improve the quality of medical care services, and balance distribution of medical resources.

Section 2. Community Health Care System

1. The DOH implemented the "Holistic Health Care Plan" in coordination with the post-SARS reforms to the medical care system. The plan aims to develop a patient-centered and community health care guided health care model, as well as create a mechanism for the vertical division of labor and horizontal cooperation among hospitals and clinics. This mechanism effectively links primary care, preventive health care, acute medical care, rehabilitation service, and long-term care systems.
2. The DOH continued to implement the "Pilot Project for the Construction of an Integrated Community Health Care Service Network." The project aims to integrate acute medical care resources by region and category. Health centers in each region serve as the operation hubs to connect various relevant agencies, such as clinics, community hospitals, medical institutions, social welfare institutions, educational institutions, community groups for disease prevention, chronic disease care, and integrated medical, information integration, and health information management. The project integrates resources for improved division and labor and expands the participation of primary health care institutions in providing

Figure 6-1 Number of Hospitals and Clinics by Year



public health care services. As of the end of 2010, a total of 50 health centers participated in the project.

Chapter 2. Emergency Medical Care and Disaster Response

Section 1. Emergency Medical Care

The DOH has been strengthening the national emergency medical network to establish an integrated emergency medical care response mechanism. This initiative aims to raise the standard of national emergency medical care and improve the quality of emergency medical services so as to safeguard the life and health of the injured and ill patients in emergency.

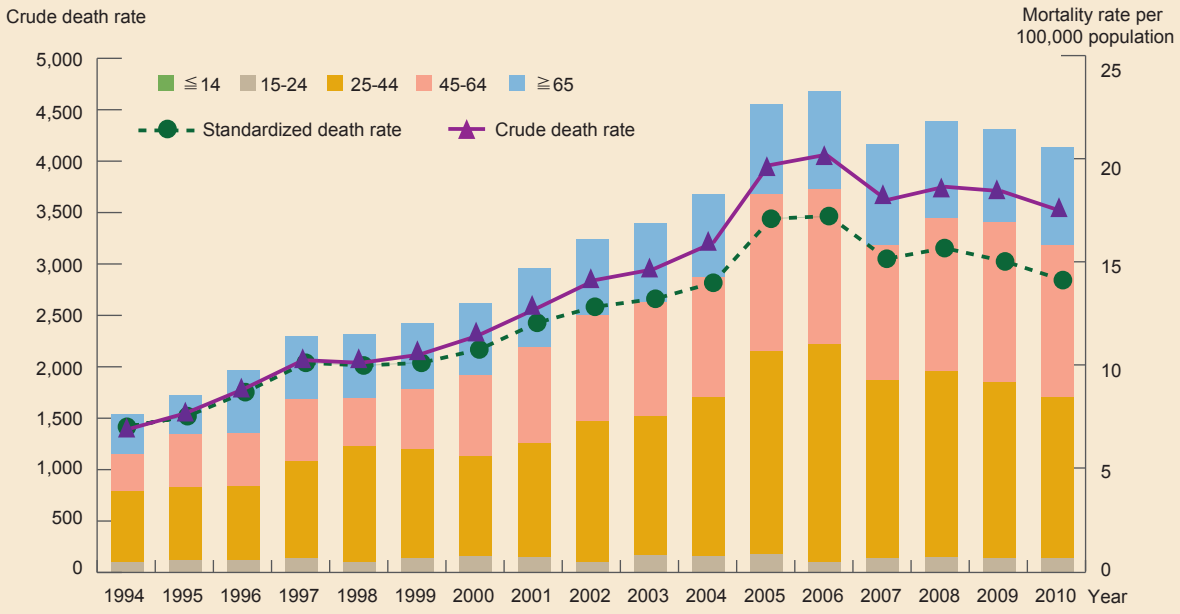
1. The DOH has fortified the capabilities of the six Regional Emergency Operation Centers (REOCs) around Taiwan, integrating emergency response measures for hazard (chemical, nuclear power plant and poison), to reduce the reaction time in the case of dire emergency as well as to monitor and have immediate access to all information related to medical incidents or other regional catastrophes. With the 6 regional operation centers, resources can be allocated swiftly in response to emergency, and all emergency medical technicians (EMTs) can be organized to cope with emergency situations.
2. On July 13, 2009, the DOH promulgated the "Standards for Classification of Hospital Emergency Medical Capabilities" as authorized under Article 38 of the Emergency Medical Services Act. According to these standards, the DOH classified hospitals based on their emergency medical capabilities and designated severe level hospitals as the last line for hospital referral. To safeguard patient rights, these hospitals are not allowed to refer out patients with emergency conditions. As of the end of 2010, the DOH had completed accreditation for 198 hospitals with emergency care responsibility (among which 23 hospitals passed the severe-grade accreditation and 26 passed the moderate-grade accreditation) to provide the public with first line emergency care services.
3. The DOH utilized the Medical Development Fund (MDF) to carry out improvement projects for regions lacking emergency medical resources. These projects strengthened the emergency medical services during special period (such as evenings, holidays, and peak tourist seasons). They also provide the emergency medical needs for local residents and visitors through the establishment of “emergency medical stations in tourist areas” and “night-time and holiday emergency stations” , as well as by “enhancing the emergency capacity of hospitals in regions lacking resources to meet the medical demands” . In 2010, MDF was used to subsidize 21 organizations.
4. Based on the overall consideration at the county levels and the assessment of the public needs, The DOH encouraged hospitals in remote areas to establish centers for special and intensive emergency care. Major focus was placed on the establishment of centers for trauma, cardiac catheterization, stroke, perinatal conditions, emergency care, and pediatric intensive care. In 2010, there are 24 special and intensive emergency care centers established at 17 hospitals in the counties of Kinmen, Lienchiang, Penghu, Hsinchu, Miaoli, Nantou, Yunlin, Pingtung, and Taitung.
5. Since 2009, the DOH began to commission private professional institutions to provide cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) emergency training classes for personnel in enterprises and offices. There are about 8,000 people underwent training at 106 locations between year 2009 and 2010.
6. The DOH, National Fire Agency under the Ministry of the Interior, Medical Bureau under the Ministry of National Defense, and county city public health

bureaus formed a "No Warning Inspection Group" to conduct spot checks on ambulance equipment, ambulance management, in order to safeguard the rights of patients and their families.

Section 2. Disaster Response

1. In 2010, the DOH formed a group composed of health administration, drug administration, infectious disease control, and military healthcare mobilization to inspect the mobilization operations in various counties and cities. At the central level, the group coordinated drills of emergency medical care in toxic chemical disaster, port security, rail security, anti-terrorism, air crash, and shipwreck incidents. At the local level, this group supported the government to manage the emergency response training, and to provide guidance in demonstration drills. Emergency response drills for various types of disasters were conducted in eight counties and cities in total. These drills help to integrate local health authorities, hospitals, clinics, and fire fighting authorities to jointly provide rescue care and effectively improve the emergency medical response capability during disasters.
2. The DOH continued to utilize emergency care management systems to strengthen real-time information gathering during major disaster incidents, to monitor the emergency medical capability and quality of hospitals nationwide, and to provide information to emergency medical technicians and ambulances for first-line emergency medical care.
3. According to its operational guidelines on disaster prevention and emergency response, the DOH established working groups for emergency medical services, disease control, and administrative support to handle disaster

Figure 6-2 Number of Suicide Cases and Mortality Rate by Year



Note: Dotted line denotes the standardized death rate adjusted by the demographic structure of the World Standard Population in 2000.

mitigation, preparation, emergency response, and post-disaster recovery work. These groups, in charge of "the medical /public health and environmental protection group" , were integrated in the national disaster prevention and rescue command framework. Their responsibilities included overall planning of emergency medical services, infectious disease control, food safety and other public health affairs (such as mental health). In 2010, the Central Emergency Operation Center was in operation for seven times for a total of 554 hours, during which periods the DOH had a timely and positive contributions.

Chapter 3. Psychiatric Care, Mental Health, and Suicide Prevention

Social change, the loosening of interpersonal relationship, and the weakening of social support has heightened the prevalence of social and mental problems in society. Preventing psychiatric disorders and improving mental health have thus become important issues of concern. In this regard, the DOH has dedicated efforts to promote medical care for psychiatric patients, map out plans to improve mental health services, and provide the public with mental health counseling services so as to prevent the occurrence of psychiatric disorders.

Section 1. Psychiatric Care Services

The DOH has worked hard to establish a sound care network to provide patients with severe psychiatric disorders access to a comprehensive care network. As part of this effort, it has actively promoted community rehabilitation services to help such patients reintegrate with society. The DOH also handles affairs related to ensuring that victims of domestic violence or sexual assault have access to proper medical care. Major achievements in this area in 2010 are as follows:

1. The DOH provides subsidies to government and private sector organizations at various levels for substantial psychiatric treatment, psychiatric rehabilitation, and psychiatric care facilities and equipment to improve the accessibility of medical care services for psychiatric patients in stable conditions. Such subsidies have been provided to four psychiatric rehabilitation organizations and one psychiatric nursing home.
2. The DOH has actively strengthened psychiatric rehabilitation facilities and community rehabilitation services to encourage psychiatric patients who have been in medical institutions for a long period but are in stable condition, have only partial functional loss, or have a high rehabilitation potential to return to the society. In 2010, day community rehabilitation centers served 3,566 patients; while half-way houses had a service capacity of 3,648 beds.
3. The DOH has set up a registry for community follow-up psychiatric care management systems to effectively stay informed about community patient care. A total of 119,791 patients have been placed under monitoring for follow-up visits. In addition, the DOH had provided subsidies to all counties and cities (except for Lienchiang County). Under this program, 97 community care health visitors are able to make home visits and make sure that discharged psychiatric patients make regular follow-up hospital visits, provide appropriate referrals, rehabilitation, and follow-up based on their needs, rehabilitation, and follow-up treatment, and educate family members on crisis management in high risk cases.
4. The DOH provided subsidies for 25 municipality and county (city) governments to set up community mental health centers to provide the community residents with mental health care, information, and counseling services, and to promote mental health education.
5. Under the Domestic Violence Offender Intervention Project, victims can access offender cognitive education and counseling, psychological treatment, psychiatric treatment, and addiction treatment services. In 2010, a total of 2,363 persons received service under the program, with

an intervention implementation rate at 93.11%. The DOH has designated 155 institutions for drug addiction withdrawal treatment. It also prepared 3,844 certificates of injury diagnosis and sent 2,492 laboratory test evidence collection kits to the Criminal Investigation Bureau. The Department also handled alcohol addiction rehabilitation service cases, providing inpatient treatment for 657 persons, outpatient treatment for 716 persons, psychological counseling for 872 persons, and cognitive education for curing alcoholism for 3,466 persons.

6. The DOH designated 108 institutions for drug addiction withdrawal treatment; of them, 18 are drug addiction withdrawal treatment core hospitals, 80 are drug-addiction withdrawal hospitals and 10 are drug-addiction withdrawal clinics. In addition, to take into account both public health and public safety, the DOH implemented the promotion of the drug addiction withdrawal treatment by partially subsidizing the medical costs involving alternative therapies for HIV-negative drug addicts. The 100 alternative therapy institutions nationwide handle 11,750 alternative therapy cases monthly on average and provide 10,489,694 patient days of medication. The cumulative number of patients undergoing alternative treatment nationally increased from 14,131 in 2007 to 33,672 patients in 2010. In the same comparison period, the number of HIV cases involving drug addiction fell from 733 in 2007 to 105 and 2010. In order to strengthen the willingness of patients to undergo drug addiction treatment, the DOH has instructed county and city government drug abuse prevention centers to provide regular follow-up guidance and information on job, education, and care referral services and other social welfare assistance resources.

Section 2. Mental Health and Suicide Prevention

The WHO predicts that by 2020 the deaths by suicide will rank ninth among the ten leading causes of death worldwide. In Taiwan, the rate of deaths by suicide per 100,000 people increased from 6.2 in 1994 to 19.3 in 2006, making suicide one of the ten leading causes of death for the 13 consecutive years during that period. However, in 2010, suicide was not among the ten leading causes of death as the rate of death fell to 16.8, ranking suicide eleventh on the list (see Figure 6-2). In recent years, the 921 Earthquake, global financial crisis, SARS epidemic, Typhoon Morakot disaster, and other incidents have had a multiple impact on health, society and the economy in Taiwan. This has directly or indirectly created major economic and social loss and adversely effected the mental health environment. Unemployment, income loss, and economic problems have placed individuals and families in a predicament. The DOH therefore has prioritized suicide prevention work and post-disaster mental health work and is actively implementing various prevention measures.

1. The DOH established a National Suicide Prevention Center to assist in planning assessment of the efficacy of suicide prevention strategies and produce suicide-related statistical analysis. A toll-free 24-hour hotline (0800-788995) was set up to provide the public with 24-hour professional counseling services. In 2010, services were provided to 71,781 people, up 17.2% from the 61,284 people served in 2009.
2. The DOH executed the "National Action Plan on Strategies for the Prevention of Suicide—Second Phase." The plan is formulated on the concept of prevention in three stages and by five levels, where suicide prevention strategy incorporates three dimensions—comprehensiveness, selectiveness and indicator-oriented. The DOH also drafted short, mid and long-term goals for suicide prevention under the plan.
3. The DOH set up a "Suicide Prevention Reporting and Care System" to strengthen reporting of suicide attempts and to provide subsidies to county and city health bureaus for 117 personnel to conduct suicide outreach visits, strengthen the functions of the community mental health centers,

and activate community support networks. Through follow-up house visits and referral tracking, the plan has reduced repeat suicide attempts and suicide mortality rates. In 2010, the system handled 26,870 reports and 74,794 home visits, representing a home visit implementation rate of 99.6% and a sharp increase in service volume over 2009.

4. In order to meet the mental rehabilitation treatment of victims of the Typhoon Morakot disaster, the DOH established a disaster mental health system. As of 2010, the system provided service through more than 63 psychiatric treatment and mental health organizations, dispatched medical personnel 7,552 times, made 46,869 home visits to disaster victims, and dispatched outreach volunteers and rescue personnel 1,484 times.

Chapter 4. Long-Term Care Service Systems

Section 1. Establishing Accessible and Universal Long-term Care Services

Based on population statistics, citizens above the age of 65 accounted for 10.7% of the overall population at the end of 2010. The aging of the population, prolonged average life expectancy, changes in disease patterns and the sharp increase in the number of disabled persons have dramatically increased the demand for long-term care. The DOH has therefore promoted long-term care services systems to provide the public with accessible, continuous, and effective long-term care services. The main strategies are summarized as follows.

1. Developing a community aging-in-place service network

1) Continued promotion of long-term care plans to improve service utilization rates:
In 2008, the Executive Yuan approved the Ten-year Plan for Long-term Care to assist counties and cities with the establishment of long-term care management systems. As of 2010, there were 22 long-term care administration centers with 38 branches and 315 long-term care professionals. The percentage of the total disabled population served by this network has increased from 2.3% in 2008 to 5.7% in 2009, 16.3% in 2010, and 19.9% in the first eight months of 2011.

2) Improving the accessibility of long-term care for the economically disadvantaged
Comparative analyses of socioeconomic case studies on long-term care show that mid- to low-income households account for 13.87% of all households receiving assistance for such +care (this group accounts for 4% of the total population); while low-income households account for 12.8% of the assisted households (and 1% of the total population). These figures show that economically disadvantaged persons are receiving more assistance than is the general public under the Ten-year Plan for Long-term Care.

2. Creating a legal basis for long-term care

Long-term care is a necessary foundation for providing persons with physical and mental disabilities with community-based, home, and institutional care services. In order to strengthen development of the long-term care service network and system so that the public may access high quality and universally available services, the DOH began drafting the Long-term Care Service Act in 2009. The bill was submitted to the Executive Yuan for review on October 19, 2010. The legislature has approved the name (the Long-term Care Service Bill) and articles 1 to 5 of the bill.

3. Planning a long-term care service network

In order to promote the balanced development of long-term care resources and the overall planning of current long-term care institutions, rational human resource allocation, and division of long-term care areas, the DOH formulated the Long-term Care Service Network Framework and

Plan (Draft) in 2010. The main content of this plan is as follows:

1) Rational division of long-term care service network areas and set area resource target values.
2) Develop long-term care service resources, including long-term care institutions and human resources, effectively allocate regional long-term care resources, and provide assistance to resource-scarce regions (and remote areas) to develop community-based long-term care resources and cultivate diverse human resources.
3) Improve the quality of long-term care service by developing integrated evaluation mechanisms for various types of long-term care institutions.

4. Conducting the National Long-term Care Need Survey 2010

In order to estimate the supply and demand of long-term care resources, as well as the scale and actuarial rates for long-term care insurance as a reference in the development of long-term care service systems, the DOH began to conduct a 350,000-person interview-based survey in 2010. The Department has completed the first phase of the "The National Long-term Care Need Survey 2010" and prepared an initial statistical report. This report indicates that the disability rate in Taiwan is 2.98% of the population. In 2011, the second phase of the survey was conducted with more in-depth interviews of 10,000 persons and their caregivers, who were identified in the first phase survey as needing long-term care services.

Section 2. Long-term Care Professional Training

In order to meet the rising demand for long-term care in future, the DOH provides ongoing training for administrators at long-term care administration centers. Under the 2010 to 2012 Plan for the Development of Long-term Care Professional Human Resources, the Department is committing resources to strengthen the care ability of long-term care professionals and meet the diverse needs of long-term care recipients.

The DOH has completed three phases of the "Long-term Care Professional Human Resources Training course planning. These include: Level I: General courses focusing on basic and broad long-term care concepts; Level II: Specialized courses to strengthen professional care ability in specialized areas; and Level III: Integrated courses to strengthen interdisciplinary and integrated ability. The training program is being carried out in phases, starting in 2010.

1. Continuing education for long-term care medical staff: Level I–General Courses: Training was provided for 1,963 people, including 1,097 nursing personnel, 38 physicians, 142 occupational therapists, 158 physical therapists, 233 pharmacists, 152 dietitians, 132 social workers, and 11 clinical psychologists. Level II–Specialized Courses were completed by 1,627 people, including 421 nursing personnel, 294 physicians, 85 occupational therapists, 347 physical therapists, 380 pharmacists, and 100 dietitians.
2. Arranging training for long-term care administration center personnel: A total of 63 people completed the core training course and 63 people completed practical training. In addition, experts and scholars were sent to county and city long-term care administration centers to get a first-hand understanding and provide operational assistance to improve the service quality of work personnel.

Section 3. Long-term Care Institution Quality Management

As of the end of June 2011, there were 408 nursing homes in Taiwan. These institutions are among the important long-term care service resources at present. Since 2009, the DOH has conducted nursing home accreditation in accordance with the Nursing Personnel Act to guarantee and upgrade service quality. As of 2010, a total of 370 nursing homes had undergone

accreditation. Of this total, 306 institutions, or 82.7%, passed the accreditation. The institutions that failed the accreditation were placed under regular supervision and accreditation of the health bureau with jurisdiction for strengthened management.

Under the current system, long-term care institutions are administered by different competent authorities at the central government level. The different authorities conduct accreditation of these institutions according to different laws and regulations and are based on different institution classifications, quality control indicators, and handling circumstances. As a result, the public lacks references for selecting long-term care institutions and assessing the service quality of long-term care insurers. The DOH thus planned the "Social Affairs and Health Affairs Integrated Assessment of Long-term Health Institutions." In 2010, the Department completed the draft proposal for integrating accreditation of long-term care institutions.

Section 4. Promoting Tele-healthcare

In response to the aging of Taiwan's population, the DOH plans to carry out the "Telecare Service Development Project" from 2010 to 2014. Based on the achievements of the "Pilot Telecare Project" and "Telecare Services Modification and Quality Promotion Project" carried out by the Department in 2007 and 2008, this project continues and builds on tele-healthcare promotion through the establishment of related measures and promotion of industrial development

1. Service Expansion

In order to replicate and spread tele-healthcare services throughout Taiwan, the DOH commissioned teams in the northern, central, southern, and eastern regions to integrate 62 healthcare institutions into a tele-healthcare network. These teams are Taipei Medical University Hospital (for the northern region), Changhua Christian Hospital (central), Kaohsiung Medical University Chung-Ho Memorial Hospital (south), and Mennonite Christian Hospital (east). As of the end of June 2011, the network has provided 745,061 services for 3,717 people. In order to achieve the main goal of service sustainability, the network will progressively standardize services and develop service business models to facilitate related industry promotion and development in future. It also will establish regional service centers to integrate care resources and provide the public with real-time consultation and health management services.

2. Creating a Sound Environment

In order to enhance the environment for tele-healthcare development, the DOH is conducting research on tele-healthcare information transmission standards, relevant policies and laws, and service cost-effectiveness assessment. The following results have been achieved:

1) Promotion of standards: The DOH formulated standards for the use of continuity care documents, drafted tele-healthcare standards, and improved processes.
2) Regulatory Research and Deliberation: The DOH conducted regulatory research, deliberation, recommendation, and analysis in reference to tele-healthcare development in advanced countries. It also prepared integrated recommendations and analysis on tele-healthcare and long-term care.
3) Cost effectiveness assessment: The DOH estimated the effectiveness of tele-healthcare service based on a survey of effectiveness of tele-healthcare services by replicating and proliferating population participated in the tele-healthcare services in 2010.

3. Information Integration and Interfacing

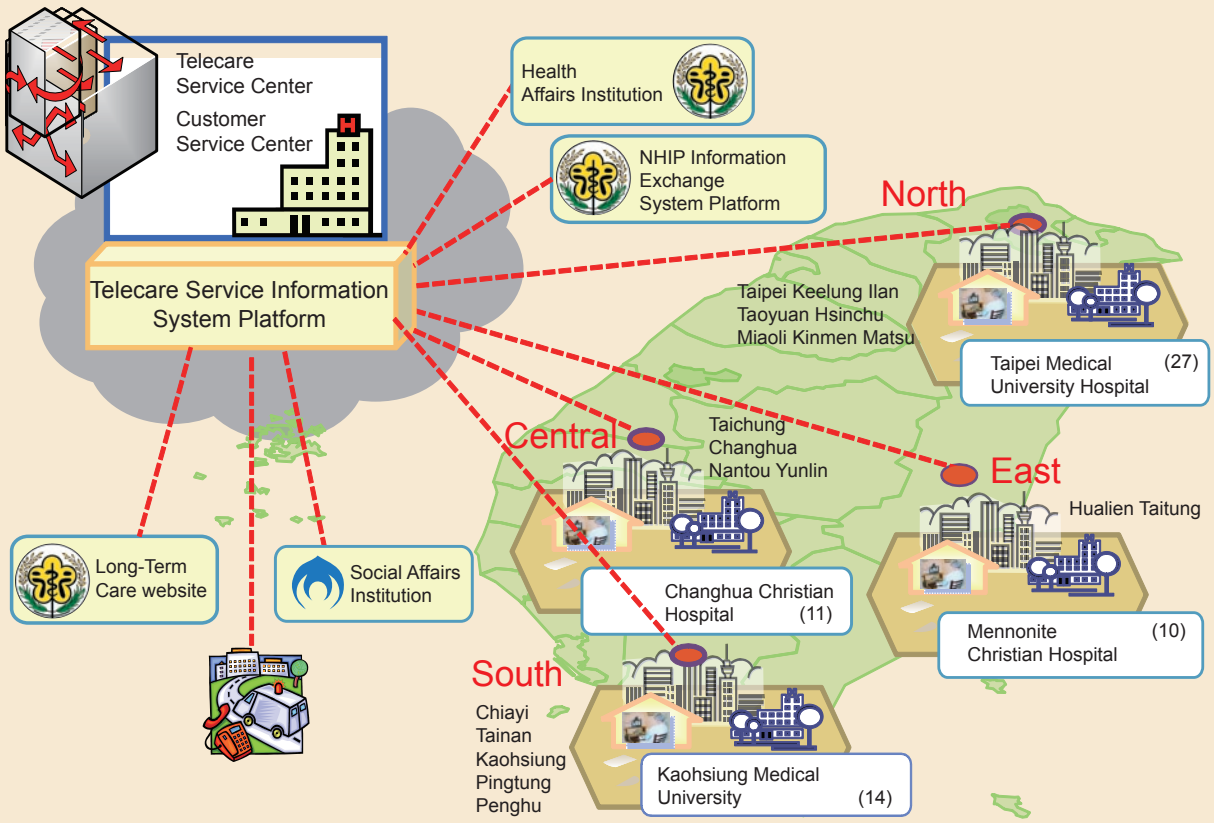
In 2010, the DOH completed information system platform interfacing and testing for the north, central, south, and east area service teams, completed eight service modules, and produced five standard documents. It also provided verification platforms for a wide range

of innovative remote services and formulated service norms and standards for the electronic care records and the transmission of remote physiological and healthcare information to encourage participation by more care institutions, service providers, and related industries. Furthermore, in response to future healthcare plans in government cloud computing, the DOH will integrate the healthcare cloud with regional healthcare services, link regional service systems and life resources, and establish a cloud healthcare record database. The Department also will use various cloud computing terminal equipment to provide new types of smart, mobile, and personalized healthcare services.

4. Education and Advocacy

In 2010, the DOH participated in four medical exhibitions and held an international tele-healthcare symposium. The symposium was attended by international experts and experts from the domestic industry, government, academic and research sectors and had a satisfaction rate of 86%. In the area of tele-healthcare related training, as of the end of 2010, the DOH arranged 12 service and information training courses completed by 541 people. In future, the Department will continue to arrange training based on the needs of service personnel and actively participate in national biotechnology and healthcare exhibitions to promote tele-healthcare services to the public.

Figure 6-3 Commissioned Service Expansion Cases Handled in 2010



Chapter 5. Quality of Medical Care

To provide high quality, comprehensive and safe health healthcare services, the DOH has made it a priority to establish a safe medical environment, improve the quality of medical human resources, strengthen hospital administration, carry out effective and sustained external quality monitoring systems for hospitals, establish national blood quality control and maintenance systems, and maintain a fair, equitable and transparent organ donation mechanism.

Section 1. Quality of Medical Care Services

With a view to create a patient safety oriented medical care environment, the DOH followed out a new hospital accreditation system, published annual objectives for medical quality and patient safety, and developed a patient safety incident reporting mechanism. Achievement highlights in 2010 are as follows:

1. Patient Safety and Quality of Medical Care

Patient safety has become an important issue for the WHO, Europe and the United States in recent years. In order to protect patient safety and improve healthcare quality, the DOH has been strengthening the functions of its Health Advisory Committee on Medical Quality Policy and planning a number of key measures.

1) The DOH formulated the "Annual Objectives for the Promotion of Patient Safety and Quality of Medical Care in Hospitals for 2010-2011." These objectives include improving the safe use of drugs, implementing infection control, improving surgical safety, preventing patient falls and reducing the degree of injury, encouraging the reporting of abnormal incidents, improving the effectiveness of communication among health care staff, encouraging patients and their families to participate in patient safety work, improving pipeline safety, and strengthening hospital fire prevention and response. The DOH arranges scheduled and non-scheduled assessments of the above-mentioned objectives and implementation strategies.
2) The DOH established the Taiwan Patient Safety Reporting System (TPR) to build up a patient-safety culture and create a non-punitive learning environment to avoid the repeated occurrences of mistakes and errors to improve patient safety. As of 2010, a total of 2,657 hospitals had taken part in this system, with reported cases totaling at 58,816.
3) The DOH set up a patient safety website to provide patients with the latest information on safety and to serve as a platform for information exchange.
4) Regulations on safe hospital environments are stipulated in the "Hospital Accreditation Standards."
5) In order to ensure healthcare quality and patients' rights, the DOH announced the "Operational Guidelines for Outsourcing by Medical Institutions" on February 23, 2010. The guidelines stipulate that hospitals bear full responsibility for outsourced operations and prohibit the outsourcing of diagnosis, treatment, core care, and other core medical activities, with an exception for hospitals in remote areas that have difficulty recruiting qualified personnel.

2. Hospital Accreditation System

The DOH has made reforms to the accreditation system for hospitals and teaching hospitals based on the core values of providing patient-centered and patient-prioritized safety services.

1) Revision of the "Hospital Accreditation Scheme" and "Teaching Hospital Accreditation Scheme": In 2010, the original 505 accreditation items were reorganized into 238 items, and seven medical manpower distribution channels were named essential

items. The revised teaching hospital accreditation program incorporates accreditation and inquiry functions, including the "New Teaching Hospital Accreditation Scheme," a survey of post-graduate general medical training, and a review of the teaching hospital teaching expense subsidy plan; 14 categories of medical personnel are now within the scope of teaching hospital accreditation

2) Establishment of a "Non-Scheduled and Timely" regular follow-up supervision and inspection system to ensure the continuous improvement in the quality of medical care: By the end of 2010, 453 hospitals had passed the accreditation, accounting for 89% of all hospitals. Moreover, follow-up inspections were made at 33 hospitals and random follow-up inspections at 10 hospitals.

3) In order to strengthen the management of psychiatric rehabilitation institutions and enhance the quality of community health care for psychiatric patients, the DOH implemented the accreditation for psychiatric hospitals and psychiatric rehabilitation institutions. In 2010, there were 44 psychiatric rehabilitation institutions applying for assessment. After evaluation, 37 institutions met the standard (84% pass rate). To ensure the operation quality of the aforementioned accredited institutions, the DOH is conducting follow-up visits to these institutions during the three-year accreditation validity period.

4) To establish a superior patient-centered Chinese medicine healthcare system and to provide a safe healthcare environment for the public, the DOH proceeded with the 2011 "Accreditation of Chinese Medical Hospitals and Chinese Medical Departments Affiliated with Western Hospitals." As of the end of May 2011, 45 hospitals have completed onsite inspections.

3. Starting in 2010, the DOH has been integrating hospital accreditation, medical treatment and hygiene service, as well as specialist training institute functions. The new assessment procedure reduces the number of assessments from 1,545 to 667, relieving operational interference.

Section 2. Improving the Quality of Blood Supply and Transfusion

To provide the citizens of Taiwan with safe blood products, the government implemented a voluntary, non-remunerated blood donation policy.

1. To reduce the risk of HIV infection by blood transfusion recipients, the DOH has been actively educating the public the correct blood donation attitude, dissuading HIV-positive high-risk people to use blood donation to test for AIDS.
2. In order to prevent hemolysis in patients that have received blood transfusions, the DOH screens for blood red blood cell antigens to efficiently increase the number of red blood cell antigen records so as to increase the probability of a suitable blood transfusion match for patients with rare blood types and improve the safety of blood transfusions.
3. In order to effectively reduce test window periods and the probability of transfusion-related infections, the DOH initiated the multi-phase implementation of Nucleic Acid Amplifications (NAT) in July 2010, which will randomly sample 250,000 donors annually, focusing on repeat donors.

Section 3. Improving the Efficiency and Quality of Organ Donation and Transplantation

According to statistics, there are currently about 7,200 patients in Taiwan waiting for organ transplantation, but organ donation of the deceased could only be used to treat approximately 750 people, presenting an intractable gap between the vast number of people on the waiting list and

the bitter reality. In order to promote the practice of organ donation by the general public and boost the sources of organ donation, the DOH set up an "Incorporated Foundation: Organ Donation and Transplantation Registration Center" (hereafter referred to as the Registration Center) for the promotion of organ donation, and promote effective use of organ donation, all for the purpose of advancing public health. With multiple large-scale measures in place, Taiwan is currently ranked number two in Asia in terms of organ donation rate, in addition our organ transplantation success rate is comparative to the United States and other developed countries

1. In Taiwan, there are 10 Organ Procurement Hospital (OPH), each cooperates with 15-20 local hospitals, to establish Organ Procurement Organization (OPO) to actively encourage potential donors. In 2010, there were a total of 209 postmortem donors, and 756 recipients.
2. The Registration Center launched the "Organ Donation and Transplantation Registration System". From April 1, 2005 onwards, all cadaveric organ donations have been allotted on the Organ Donation and Transplantation Registration System to establish a fair, impartial and transparent mechanism for organ allocation.

Section 4 Quality of Nursing Care

1. The DOH promoted the Professionnal Registered Nurses system. As of the end of 2010, a total of 2,564 people had passed the certification. In 2011, a total of 69 hospitals were approved to provide training for professional registered nurses, with the training capacity of 2,488 people.
2. Continue subsidizing nursing organizations' promotion of continuing education for nursing staff and implement related integrated crediting assessments. In 2010, 11 organizations received subsidies, and 14,200 persons participated in 90 such sessions. In 2011, three organizations received subsidies to build educational training websites/networks, and an estimated 128 class sessions were held (including televised sessions).
3. Promoting full-care systems and establishing a nursing and paramedical staff cooperation model to reduce nursing staff workloads by helping families solve patient care needs. In 2010, in conjunction with the Council of Labor Affairs' "Diversified Employment Development Scheme," the DOH subsidized the training of unemployed persons to provide home and hospitalized patient care services. In January 2011, nine DOH hospitals established comprehensive care wards to provide free caretaker services to disadvantaged groups. In the latter half of 2011, the DOH commissioned the establishment of a fee-based joint employment full care scheme.
4. The DOH organized the post-natal care nursing institution quality improvement assessment in 2011. To encourage participation, participants who passed the assessment in 2010 are deemed to have passed the supervisory examination; while non-participants were required to take the supervisory examination.

Chapter 6. Medical Manpower

To improve service quality, healthcare services must have sufficient manpower with outstanding clinical capacity. The DOH will continue to implement manpower planning and medical staff training projects to prevent a staffing shortage; it will also bolster regular healthcare system operations to ensure qualitative improvement and patient safety.

Section 1. Current Status of Medical Manpower

According to the licensing system for professional medical personnel, there are 14 laws and regulations governing the management of medical personnel, including the Physician's Act, Pharmacist's Act, Midwifery Personnel Act, Dietitian's Act, Nursing Personnel Act, Physical Therapist Act, Occupational Therapist Act, Medical Technologist Act, Medical Radiology Technologist Act, Psychological Counseling Personnel Act,

Respiratory Therapist Act, Audiologist Act, Dental Technician Act, and Language Therapist Act.

Section 2. Fostering of Medical Manpower

To improve the quality of medical personnel, programs of cultivation and on-job training of medical personnel are conducted every year. Major achievement highlights are as follows.

1. The DOH adopts a quota system for cultivation of medical personnel. In principle, the number of the medical students to be enrolled each year is limited to 1,300. The training of other categories of medical personnel is based on the special quota system. Applications shall be filed prior to the establishment of medical training programs, and be reviewed by the Ministry of Education for control purposes. The goal of planning for the manpower of practitioner in the future will focus on balanced distribution of medical manpower resources, and establish a periodic assessment mechanism. The number of medical personnel licensed and in practice per 10,000 population by yearend in 2010 is shown in Table 6-1.
2. To foster medical personnel in resource-poor mountainous/indigenous and off-shore island areas, the DOH has been funding the fostering of medical personnel who will be sent back to service in their native regions following the completion of their training since 1969. Beginning in 2002, said funding programs in Kinmen and Lien Chiang counties were integrated. As of the end of 2010, the program has trained a total of 744 healthcare professionals, including 373 physicians, 58 dentists, 30 pharmacists, and 283 other related professionals; the program retention rate stands at 72%.
3. The DOH has been actively promoting a "Post Graduation General Medical Training Program" to strengthen holistic care concepts and ability among physicians, increase the quality residency training, and realize the concepts of "patient-centered" holistic medical care. Three-month general medical training courses have been offered since 2003. The second phase of the program came into effect in 2006. Based on the model of the three-month training program, this phase includes six-month post-graduation medical training. Phase three commenced in July 2011 and involves one-year post-graduation medical training aiming at improving the learning efficiency for trainees, enabling trained physicians to practice independently, and increasing the quality of primary care services. In 2010, a total of 115 hospitals were approved to arrange post-graduation general medical training programs. Among them, 105 hospitals received first-year residency training and grants. A total of 1,447 physicians received residency training. In addition, grants were provided to groups to arrange 20 physician's training camps that provided training for 2,173 instructors and clinical teachers.
4. To establish a systemic clinical dentistry training program, improve post-graduate training quality and results, and improve the general quality of healthcare, the DOH implemented the "two-year Post Graduate Year program" on July 1, 2010. As of the end of 2010, 286 healthcare institutions (82 hospitals and 204 clinics) have been approved to implement the program.
5. The DOH has commissioned professional medical associations to conduct screening and review of specialty physicians to improve the quality of medical professional training. Hospitals for the training of specialty physicians are accredited and certified every three years. Currently, accreditation is provided in 26 areas of specialization. As of the end of 2010, a total of 43,474 physicians had passed the accreditation process.
6. In 2007, the DOH launched a grant program for teaching hospitals to establish core training courses for medical personnel who have undergone accreditation training within the past two years. Awards are also provided to hospitals with excellent training results. In 2010, a total of 131 teaching hospitals participated in the

program, 2,173 training plans were approved, and 10,856 medical personnel received training per month on average. Newly-certified (within two years) medical personnel had a training provision coverage ratio of 50.3%. The program has enabled new medical personnel to receive comprehensive clinical education and training and thereby improved the quality of medical service.

7. The training of Chinese medicine practitioners in Taiwan is divided into a seven-year system and eight-year system (a seven-year undergraduate training period in 1966-1995, an eight-year period from 1996 on, and either a seven or eight-year training period starting in 2003) and the 5-year post-baccalaureate program. In order to facilitate the normal development of proper Chinese medicine education, and increase the ratio of properly educated Chinese medicine practitioners, the initial qualifying examination for doctors of Chinese medicine was terminated in 2008, while the special examination for doctors of Chinese medicine will be terminated in 2011.
8. To establish a system for Chinese medicine clinical training, we must first improve the supervisory capacities of supervising physician in Chinese medical care institutions. In 2014, the DOH will implement the "Chinese medical care institution supervising physician training program." In future, all candidates must work a two-year residency at an accredited or DOH-designated Chinese medicine department/clinic. To provide guidance to said hospitals, the "Chinese medical care institutions supervising physician training program" has helped 33 hospitals train and place 122 new Chinese medicine physicians. The program has also hosted 17 case report seminars with a total of 2,181 related participants.

Table 6-1 Practicing Medical Personnel in 2010

Category	No. of Practicing Persons	No. of Practicing persons (Per 10,000 population)
Physicians	38,887	16.79
Dentists	11,656	5.03
Chinese medicine doctors	5,354	2.31
Medical technologists (technicians)	8,377	3.62
Medical radiology technologists (technicians)	4,913	2.12
Pharmacists (assistant pharmacists)	30,001	12.95
Nursing personnel	128,955	55.67
Midwives	208	0.09
Occupational therapists (technicians)	2,287	0.99
Physical therapists (technicians)	5,214	2.25
Counseling psychologists	671	0.29
Clinical psychologists	696	0.30
Dietitians	1,687	0.73
Respiratory therapists	1,657	0.72
Language therapists	434	0.19
Audiologists	118	0.05

VII The National Health Insurance

Following the 1995 launch of the National Health Insurance (NHI), Taiwan residents have received comprehensive medical care by sharing risk, helping one another while helping themselves. The program has enabled many sick, impoverished people to receive the care they need and has become a mainstay of Taiwan's social net. To ensure it can continue, the Department of Health (DOH) will keep working to achieve health care reform. This part of the report focuses on important achievements in 2010 and 2011. It also explains the directions and contents of the health care reform.

Chapter 1. Current Status of the National Health Insurance

The following six sections will summarize the important business operations of the National Health Insurance, including insurance enrollment, financial status, insurance benefits, health care quality information disclosure, IC card applications, and health care for the less-privileged populations.

Section 1. Current Status of Insurance Enrollment

The National Health Insurance is a mandatory social insurance. All individuals holding the Republic of China nationality and have registered their household in Taiwan for more than four months shall, by law, be enrolled in the NHI. Legal aliens holding certification documents for residency and have resided in Taiwan for more than four months shall also, by law, be enrolled in the NHI. However, those with employee status are not subject to the restrictions of the aforementioned four-month period. By the end of 2010, the total enrollment was 23,074,487 persons, with the enrollment rate of higher than 99% of the population, nearly approaching the goal of full insurance enrollment.

Section 2. Insurance Financing

When the NHI system began in 1995, the premium rate was set at 4.25 percent. This rate was meant to maintain financial balance for five years, but, through a series of revenue-raising and cost-cutting measures along with strict financial monitoring, balance was maintained through September 2002. After two years of operating under low expenditures and revenues, the premium rate was raised slightly, to 4.55 percent. It was kept at this level for eight years, until 2009. These economic circumstances led the DOH to constantly introduce measures for achieving financial stability to prevent expansion of the health care system's financial problems. Revenue raising measures it employed in 2010 include:

1. Check identity of the insured and their premium amounts.
2. Lobby for approximately NT$1 billion annually from the Public Welfare Lottery profits and NT$24 billion from the health and welfare surcharge levied on tobacco products.
3. Adjusting the NHI Premium Rate from 4.55 to 5.17% and Raising the Upper Ceiling of Insurance Subscription Levels

The DOH has always insisted on not lowering the standard of health care. This commitment caused financial deficits to grow daily and even reach NT$60.4 billion by the end of March 2010. Based on the National Health Insurance Act regulations, conditions for raising the premium rate were met long ago. To stabilize the system's finances and stop the deficit from growing, starting from April 1, 2010, the government adjusted the premium rate from 4.55 to 5.17% and raised the upper ceiling for subscription levels from NT$131,700 to NT$182,000. Premiums for category 6 recipients were also adjusted at the same rate.

Calculating the system's finances on an accrual basis showed that from 2010 to the end of June 2011, health insurance revenues were NT$705.51 billion and costs (medical expenses) were NT$671.06 billion, for a surplus of NT$35.37 billion. And from March 1995 to the end of June 2011, revenue was NT$5.41 trillion and costs were NT$5.43trillion. The accumulated deficit was lowered to NT$22.85 billion, from its March 2010 level of NT$60.41billion. These data show that adjustment of the health insurance premium rate in 2010 was an effective measure for improving the system's finances and lowering its deficit.

Section 3. Insurance Benefits and Payment

To enhance the quality of medical care, work out reasonable payment plans, improve the pharmaceutical pricing system, and safeguard public rights in drug usage, the DOH carries on to review and revise the National Health Insurance medical payment standards. Between 2010 and 2011, the important highlights are presented as follows.

1. NHI Visits

There were 347.7 million outpatient visits in 2010, an average of 15.1 per person. A breakdown into different medical categories showed that 12.1 of these visits were made to clinics, 1.3 to dentists and 1.6 to Chinese medicine practitioners. Meanwhile hospital stays totaled 3.1 million person/times, an average of 0.13 per person (or 13 times per hundred people). The average time spent in hospital was 1.3 days per person.

2. Strengthening Health Services Accessibility for the Insured

Improving treatment accessibility for insurance recipients is contingent on building an extensive medical network. Through the end of June 2011, there were 25,356 NHI contracted medical institutions, including 19,547 medical care institutions, 4,864 pharmacies, 531 home nursing care institutions, 165 mental health rehabilitation institutions, 12 midwife institutions, 212 medical laboratories, 13 physical therapy clinics, 11 radiological clinics and one occupational therapy clinic. NHI contracted medical care institutions accounted for 92.80 percent of Taiwan's hospitals and clinics, showing that the system was accessible throughout the country.

3. Reducing the Financial Burden of Severely Ill Patients

People suffering from cancer, chronic mental illness, congenital illness or rare diseases, along with dialysis patients, were able to get treatment without copayment. Through the end of June 2011, more than 830,000 patients received a disability certificate to take advantage of this program.

4. To Enhance the Quality of Medical Care and Reasonable Payments

1) For Western Medicine

a) Continuing to Promote and Adopt DRGs Payment System: The Taiwan Diagnosis Related Groups (Tw-DRGs) payment system was launched in stages since 2010. In the first year, 155 DRG items derived from the present case payment plan were implemented. To more accurately reflect the seriousness of each case, in 2011 pancreatic transplant items were added. Also reclassified were traditional and laparoscopic appendectomies, open and endoscopic cholecystectomies, and single incision multiple vessel surgeries, helping to bring total DRG items from 155 to 164. To avoid negative effects on hospital finances, accompanying revisions in 2011 included changing chemotherapy or radiotherapy, ventilators, and dialysis from DRG to another fee-for-service system. Moreover, for children under 18 years old with a congenital disease, if the total cost surpassed the designated amount, payments for the excess were adjusted from 80 to 100 percent. And ECMO treatments were excluded from the DRG system. Besides these measures, the "New Technology Add-on Payments under the DRG Payment System." was implemented.

b) New Payment Items to Increase Treatment Scope: To improve the scope and quality of care, new items including: therapeutic drug monitoring of everolimus, free PSA, multileaf collimator/alloy block design and formulate were added to make it easier for people to receive medical care. Also to raise treatment quality and fairness while lowering the burden on patients, considered insurance systems of other countries, the indication limits for nonionic contrast media in CT scans and angiographies were cancelled.

c) Adjusting Payment Standards for Pediatrics, OB/GYN and Surgery: Since 2011, outpatient diagnostic fee of primary care for patients of 4 years old can be paid by 20 percent more for pediatricians in clinics and all outpatient services in hospitals. Also the

declaration cost for outpatient diagnostic fees was raised by 17 percent in hospitals for OB/GYN, pediatrics and neonatal care, and surgery services (including orthopedics, neurosurgery, urology, plastic surgery, colorectal surgery, cardiovascular surgery, thoracic surgery, digestive surgery, pediatric surgery and chiropractics). For patients who are also 4 years of age or below, the above outpatient diagnostic fee could be raised by 37 percent, thereby strengthening treatment scope and quality.

2) For Chinese Medicine

To improve overall medical care, five plans that will continue on a trial basis: "Pilot Project on Out-patient Clinic Care Using Chinese Medicine For Children with Cerebral Palsy", "Pilot Project on the Out-patient Clinic Care Using Chinese Medicine for Children With Asthma", and the "Improvement Project for Areas Lacking Sufficient Medical Resources", "Paramedic Pilot Project of Chinese Medicine for Inpatients of Western Medicine with Cerebrovascular Disease and Tumor after Surgery, Chemotherapy and Radiation Therapy," and "Chinese Medicine Outpatient Care Project for the Sequelae of Cerebrovascular Disease" were reviewed and amended

3) For Dentistry

"The Implementation Project for Reserve Funds in Dentist Clinic for Total Quality Assurance", "Health Care Quality Indicators and Inspection Value", "Pilot Project for Total Special Dental Outpatient Medical Service" (strengthening the dental medical service for patients with congenital cleft lip and palate and craniofacial abnormalities, as well as for patients of moderate to severe mental or physical disabilities), "Comprehensive Periodontal Treatment Plan," "Reform Proposal for the Inadequate Medical Resources Area of Dentistry Outpatient" were reviewed and amended to reward outstanding contracted dental clinics, and improved the medical care quality for special target groups.

4) Improvement of the Accessibility of the Insured to Medical Care

5) Improvement of the Pharmaceutical Pricing System and Enhancement of Public Rights in Drug Use.

a) Reasonable Drug Price Adjustments

To offer a more reasonable drug pricing system, facilitate the incorporation of new drugs into the health insurance system and reduce the discrepancy between NHI drug expenditures and hospital purchase prices, the DOH amended the "Pharmaceutical Benefit Scheme for National Health Insurance." In addition, it adjusts drug prices once every two years. Thus far, it has adjusted prices six times, effectively easing increases in drug fee expenditures.

b) Expanding the Scope of Drug Benefits

To enhance drug quality and clinical drug choices while reducing the public's financial burden, the DOH relaxed some restrictions in drug usage in 2010. When making these changes, the DOH considered the needs of patients and their families along with the recommendations from clinical medicine experts and medical associations. Items it modified included the scope of benefits for cancers, pulmonary hypertension, chronic hepatitis B and C, and rare diseases.

c) Ensuring Medical Rights and Drug Availability for Rare Disease and Hemophilia Sufferers

The NHI Medical Expenditure Negotiation Committee has set aside the earmarked budget for rare disease, hemophilia and AIDS in the hospital sector under the NHI Global Budget System since 2005. The Committee continued this practice in 2011 to provide such patients with comprehensive medical care and drug use rights.

Section 4. Disclosure of Medical Care Quality Information and Public Satisfaction Ratings

1. Disclosure of information on the quality of medical care ensures the rights of the public to sound medical care, which promotes the overall

enhancement of quality medical care. Via this transparent disclosure, people will have direct access to the results of quality monitoring indicators of various medical care institutions, making the supervision of quality medical care a national task for all citizens. To this end, the DOH has continued to disclose the medical quality information of all hospitals and departments, and publish the information on the National Health Insurance official website (http://www.nhi.gov.tw) under the designated "Medical Quality Information Disclosure" section.

Information on individual medical care institution quality could be divided into two major categories. First there were service indicators, with disclosure made of widely applicable and highly feasible service items. These indicators were used on hospitals, clinics, Chinese medicine providers, dentists and dialysis centers. There were 92 indicators in this category at the end of December 2011. The other category included disease indicators. These used disease types or treatment items to develop professional indicators related to medical care service quality. Disclosure was made of six designated diseases, including diabetes, knee replacement surgery, hysteromyoma, dialysis, peptic ulcers and asthma. Also, to help people understand what quality medicine entails, disclosed information explained the meaning behind the indicators and assessed their value. Each indicator provided valuable health information to help viewers expand their knowledge. The public could access this information using their Citizen Digital Certificate through the general. People could also check their personal NHI medical information for the past three months.

2. The DOH conducts public satisfaction surveys with the NHI program each year to understand the expectation of the insured and as a reference of policy making. In 2010, nearly 88% of local residents are satisfied with the system.

Section 5. NHI IC Card Applications

Officially launched in January 2004, the health insurance IC card, issued to every insured, provide the public with more simple, convenient and safer service. The NHI IC card stores four categories of information: basic personal information, health insurance data, special section for medical care, and health administration special section. The IC card also provides real-time information on medical care, assists in the implementation of epidemic prevention or control, and safeguards the health of all citizens. Achievement highlights in 2009 are as follows.

1. Approximately 99.9 percent of all NHI contracted medical care institutions have been electronically linked to the system and finished authentication, enhancing computerization and providing a platform for communication.
2. The DOH implemented the "Special Project of Outpatient High Using Medical Care in Clinics." In 2010, a total of 6,756 patients had visited clinics for more than 20 times according to their NHI IC card data. After counseling and supervision, the number of visits had declined by 40-50%, in which the supervision effect and the supervision duration are positively correlated.
3. To help medical personnel quickly understand a person's willingness to donate organs, by the end of 2010, 120,657 people marked on their IC cards that they were willing to act as donors. In addition, 53,338 people had registered for hospice and palliative care so, if they became terminally ill, they could die with dignity and in peace.
4. Registration of Medications, Major Tests

   On the limited space available in IC cards, NHI stored records of patients' six previous hospital visits (including 60 sets of records related to doctors' orders, medication usage and tests) for safety reasons. Information was updated on a recurring basis and available for doctors to read and consider when issuing prescriptions, so they could avoid cases of duplicate medication or examinations. This improved safety for patients and indirectly reduced waste.

Section 6. Assistance to Disadvantaged Groups

To lower insurance fee burdens for disadvantaged groups and prevent economic difficulties from affecting people's right to receiving treatment, in 2010 the DOH continued to offer the following assistance measures:

1. Subsidies on Insurance Premiums

Government agencies at various levels provide subsidies on insurance premiums for people of specific disadvantaged groups. They include the low-income households, retired veteran servicemen, unemployed laborers and their dependents, the mentally or physically disabled, the elderly above 70 years of age and children under 18 years of age in near-poor households, and unemployed aboriginal citizens under 20 and over 55 years of age. Through the end of June 2011, approximately 3 million people had received insurance subsidies worth a total of NT$32.6 billion.

2. Assistance Measures on Insurance Premiums

1) Subsidies for Insurance Premium Rate Adjustments

The NHI premium rate was raised from 4.55 to 5.17% on April 1, 2010. To lower the negative effects of the raise, the government budgeted money to cover subsidies for people below a certain income level. The subsidies took each person's economic ability into account and were used to pay the additional fees generated by the premium rate hike. The total amount subsidized through the end of June 2011 was NT$16.252 billion, benefiting an average of 18 million people each month.

a) A flat rate mechanism with subsidies applied to additional premiums was used for people in categories 1 to 3. Partial or full subsidies for additional fees generated by the premium rate hike were paid to people whose payroll related premium base was NT$40,100 (inclusive) or less and NT$42,000 to NT$50,600.

b) A wealth exclusion clause was applied to additional premiums for individuals in category 6. Subsidies were not paid to people whose income tax rate exceeded 6 percent while those at 6 percent or under had the full amount of additional premiums generated by the premium rate hike paid.

2) The DOH continued the Relief Fund for individuals, who are qualified under the "Regulations Governing Recognition of Individuals in Financial Difficulty or in Special Financial Difficulty for the National Health Insurance," to apply for interest-free loans to pay for overdue insurance premiums and the self-payment medical costs due to the insured institutions. The borrowers may begin to pay back the loans one year after the application. Through the end of June 2011, 5,579 cases of loans were approved, at about NT$353 million.

3) Insurance Premium Installment Plans

Installment plans were available for individuals who could not afford to pay insurance premiums in one payment. Through the end of June 2011, 318,000 people had benefited from this program, easing the financial burden on payments by a total of NT$7.746 billion.

4) The DOH continued to assist in the referrals to charity groups (or charitable persons) to help economically disadvantaged individuals to pay for their premiums. With the support of charitable enterprises, organizations and individuals, through the end of June 2011, 4,467 cases were successfully referred, with assistance funds totaling more than NT$20.91 million.

5) Assistance Plan to the Economically Disadvantaged

The Bureau of National Health Insurance uses 4 percent of the health and welfare surcharge levied on tobacco products to subsidize premiums for low-income members. These funds had benefited 530,000 people through the end of June 2011, with total subsidies worth about NT$2.79 billion. Also in 2009 and 2010, the Ministry successfully lobbied the Bureau of Finance to obtain Public Welfare Lottery funds for executing the "Project to Assist Disadvantaged Groups in Alleviating their Burden on Medical Cost" and the "Project to Assist Typhoon Victims and Disaster Victims to Pay for Overdue Health Insurance Premiums." These projects helped low-income households along with Typhoon Morakot victims, low-income households in disaster areas, and aboriginals

in disaster areas pay their health insurance arrears. In 2009, copayment subsidies for members of disadvantaged groups who had a hospital stay amounted to NT$1.093 billion, benefiting 43,726 people. In 2011, funds obtained from the Public Welfare Lottery were NT$386 million, which were applied to the "Project to Assist Disadvantaged Groups in Alleviating their Burden on Medical Cost." Through the end of August 2011, NT$328 million of this money was used to assist 14,469 people.

3. Strengthening Medical Rights to Those Unable to Pay Insurance Premiums

To guarantee the medical rights of disadvantaged citizen's not enrolled in the National Health Insurance or their insurance premiums are overdue, may, at time of critical illnesses, with the certificate of poverty issued by village or neighborhood chiefs or hospitals, avail themselves of medical care as insured individuals. After medical treatment, they will then be, assisted to enroll in the National Health Insurance, or apply for the Relief Fund, for referral or installment payment. Through the end of June 2011, 8,651 people received medical insurance coverage via this approach at a cost of NT$217 million.

4. Unlocking Cards to Eliminate Medical Care Impediments for Disadvantaged Groups

1) Considering the spirit of the second-generation National Health Insurance, the Bureau of National Health Insurance "has launched the "Worry-free Medical Service for the Disadvantaged" that would enable members of the disadvantaged groups to seek medical care worry-free. The plan sought to free people in arrears to the health insurance system who did not have the means to pay what they owed. It put the disadvantaged people at ease by drawing a clear line between owing premiums and the right to medical care, so their cards were not locked if they were in debt to the system.

2) The plan was geared toward children under 18, families nearly in poverty, and families in special situation. It sought to help members of disadvantaged families unlock their health insurance cards and through the end of June 2011 had benefited 385 thousand people who were in arrears to the health insurance system (including 177 thousand children under 18, 169 thousand people near the poverty line, and 39 thousand members of special situation families). Altogether, the number of people with locked IC cards due to premiums owed was reduced to 219 thousand by the end of June 2011.

Chapter 2.
NHI Reforms Reforming NHI through Legislative

Section 1. The Process of Legislation

1. The Legal Process

1) The draft amendment of the National Health Insurance Act for the second-generation NHI was first sent to the Legislature for review on May 3, 2006, but owing to the scale of the reform, it was difficult to achieve a consensus. The bill or draft was sent back to the Legislature on February 15, 2008, because the previous session of the lawmaking body had ended. In March 2010, the DOH conducted additional research on the draft amendment and sent the updated version to the Cabinet for review on April 1 of the same year. The Cabinet approved the bill on April 8 and sent it to the Legislature, where it finished its first reading on April 16. Then the bill was sent to the Legislature's Social Welfare and Environmental Health Committee, which completed its review on May 20.

2) But it was not just lawmakers who had doubts. To further its cause, the DOH held a dozen explanatory meetings between September and November, spread between northern, central and southern Taiwan. It invited representatives from a wide range of fields to

discuss topics such as the fee discrepancy burden, the premium calculation base, drug price problems, and the new premium mechanism. During this time, the Legislature held five public hearings on household income and premium rates; the fee discrepancy burden; drug prices, drug price discrepancies, and drug expenditure targets; transparency; and the formation and running of the NHI supervisory committee.

3) Then, on December 7, 2010, the Legislature began the second reading of the draft amendment to the National Health Insurance Act. It completed the second reading for Article 1, but was then stalled. A majority of ruling party lawmakers felt the time was not right for implementing second-generation NHI, despite the large effect the amendment would have on making premiums fairer. They felt further consideration was needed into whether the new system should use household income or be based on income tax. Worries included a complicated withholding and calculations process, high administrative costs, and frequent changes in household situations. The lawmakers' recommendation was that administrative agencies should conduct reform in the manner that would affect people the least.

4) To break the impasse, administrative and legislative members held a series of negotiations from December 9 to 17, 2010. Administrative units presented a new bill, based on lawmakers' recommendations. The ruling party caucus accepted the amendment for review by the general assembly, where amendment motions were reviewed. The third reading was completed on January 4, 2011, and the President of the Republic promulgated the amendment on January 26 (the implementation date was to be decided by the Cabinet).

2. Key Amendment Points

1) Controlling the Use of Resources and Reducing Inadequate Medical Treatment:

a) The penalty for deceitful claims of insurance benefits or medical expenses shall be increased to up to 20 times the amount illegally received. In addition, insurance contracts for contracted medical care institutions involved in significant violations may be suspended for a specified period of time or permanently revoked depending on the severity of the violation.

b) Counseling services or other medical care assistance shall be arranged for insured individuals involved in frequent repeated hospital visits or overuse of medical resources. Failure to observe these relevant regulations may result in rejection of insurance benefits.

c) It is clearly stipulated that the Bureau of National Health Insurance shall, on a yearly basis, submit and implement an improvement plan to prevent the inadequate consumption of medical resources as well as ensure their effective utilization. The Bureau is also responsible for reasonably adjusting drug prices each year based on the market transaction status.

d) Yearly targets for pharmaceutical expenses shall be established. Any expenses in excess of the limit shall be deducted from the medical payment.

2) Increase the Government Financial Accountability on NHI:

a) The Act clearly stipulates that the annual funds to be allocated by the government for NHI shall not be lower than 36% of the total premium revenue (after deducting other legal incomes, such as the tobacco health surtax). According to the results of a preliminary estimation, the government will need to further invest roughly NT$10 billion during the first year of implementing the revised National Health Insurance Act. This cost would increase in the future corresponding with the growth of medical spending.

b) Financial deficits accumulated before the

implementation of the revised National Health Insurance Act shall be made up by the government through its annual budgeting process.

3) Establishing a Linking Mechanism between the NHI System Revenues and Expenditures: The NHI Supervisory Committee and NHI Medical Expenditure Negotiation Committee shall be integrated under the new name of "The NHI Supervisory Commission". The Commission shall be responsible for the review of significant financial issues on an integrated basis, including premium rates, benefits scope, and the total amount of medical payments for the year, etc. The purpose is to establish a proper linking mechanism between revenues and expenditures, thereby ensuring sound management of the NHI financial system.
4) Ensuring a Stable Financial Income; Expanding the NHI Premium Calculation Base; Reinforcing the Spirit of "Ability to Pay"; Relieving Financial Burdens of Salaried Workers:
   a) Bonuses, stock dividends, business execution income, rental income, interest income, income from part-time jobs, etc. will be included in the basis for calculating supplementary premiums for the insured. This approach will also lead to a reasonable reduction of the existing premium rate and lessen the financial burden on the general public.
   b) A supplementary premium shall be collected from employers based on the difference between the total monthly salary paid by the employer and the sum of monthly claimed insured amount for the employees.
5) Adopting Diversified Payment Methods to Invest in the Health of the People: The principle for payment shall be "Treatments of diseases in the same Diagnosis Related Group (DRG) shall receive the same amount of NHI payment". The "Capitation Payment Methodology" shall also be incorporated into the system and PQRS (Physical Quality and Responsibility System) shall be implemented. These approaches are adopted to invest in the well-being of the people.
6) Keeping Important Information Transparent and Encouraging Public Participation:
   a) It is clearly stipulated in the Act that the following information should be disclosed publicly: meeting records on major NHI-related issues and interests of the participating members; financial reports; medical quality information and ratio of insured beds of the contracted medical care institutions; as well as the number of insured beds and major violations of contracted hospitals, etc.
   b) Representatives of premium payers shall be invited to participate in all important review/determination processes, including premium rates, benefits scope, total amount of medical payments for the year, fee schedule for medical services and drugs, facilitation of the Global Budget Payment System, and special medical material for "Balanced Billing", etc. If necessary, the NHI Supervisory Commission shall also organize relevant citizen participation activities to obtain feedback from the general public.
7) Protecting the Rights and Interests of the Disadvantaged by Reducing Copayments:
   a) To protect the rights of the disadvantaged receiving medical care, the Insurer shall not suspend the benefit coverage (i.e., to suspend the NHI card) against the following people as a result of delayed payments of the premium or overdue penalties: individuals with financial difficulties, victims of domestic violence who are under protection, and people who have no economic ability and refuse to pay the premium.
   b) Reduction or exemption of copayment shall be granted for those in areas with shortages of medical resources.
   c) The percentage of copayment for home nursing care shall be reduced to 5%.

8) Stricter Restrictions Shall be Enforced on Access to NHI Benefits by New Residents and Individuals Who Have Stayed Overseas for a Long Period of Time:
   a) Rather than allowing immediate access to the NHI benefits by "any previous NHI enrollment records" upon their return to Taiwan, the regulations shall be amended to allow access to NHI only when the applicant has "ever enrolled in the NHI within the past two years".
   b) For the following applicants, access to the NHI benefits shall only be allowed when the applicant has lived or completed household registration in the country for more than six months: applicants who have returned to Taiwan and completed/regained household registration for the first time, or applicants who are holding resident certificates for living in Taiwan. The rule shall not apply to applicants who are employed in the country, government employees working overseas, or their families.
9) Convicts are now covered by the NHI: The purpose of this approach is to fully realize the spirit of the NHI system in improving the health of all people and to safeguard the basic human rights of convicts to stay healthy.

3. Summary

It took 11 years of planning and legislation, starting in 2001, to get the second-generation health care amendment passed. It is the biggest reform in the NHI system's history. There are now high hopes that the launch of the second-generation health care means a new era for the NHI system. To improve the system even further, future ambitions include finding better ways to support disadvantaged groups, provide high quality care and distribute resources fairly. These changes will lead to a new stage in health care reform.

Section 2. NHI Reform Preparation Work

Besides changing the method for calculating premium, the amendment to the National Health Insurance Act that passed increased the government's financial responsibility, designed a mechanism for linking revenue and expenditures, restricted resource usage, reduced inappropriate medical treatment, evaluated implementation of new medical technology, and made information more transparent. These changes put the health insurance system on the path to improvement. The DOH frequently considered changes or additions that could be made to the law, determining that 37 statutes needed to be concluded or revised and 16 needed to be added.

To give people a better understanding of the value of second-generation NHI and the key parts of reform, the DOH eagerly responded to questions sent its way. Meanwhile, when publicizing the changes it targeted different groups of people, to take a more personalized approach, and decided to implement reform in stages. The first stage was to give people a strong understanding of the key points of the second-generation NHI while gathering opinions from different groups that it could refer to when formulating potential changes or additions. Stage two involved delving deeper into issues that people cared strongly about while making progress on new rules and regulations. More concrete explanation was also provided on implementation. In stage three the focus shifted to practical and operational issues to help achieve smooth implementation of the second-generation NHI.

The equity, efficiency and quality that was announced with the promulgation of the second-generation NHI arose from the core spirit of the original amendment. These were also the targets that the DOH and the BNHI worked hard to achieve. In the future, these agencies want to use implementation of the second-generation NHI to make payment of premiums fairer, enhance health care quality, improve administrative efficiency, reduce medical resource gaps, and provide better care for the disadvantaged groups. By building a more robust health care system through structural changes, Taiwan residents can look forward to healthier, longer-lasting and happier lives.

VIII Health Care for the Less Privileged Groups

In 1998, When the WHO announced its "health for all in the 21st century" policy in 1998, it focused on equity in health, emphasizing treatment among the different sexes and races along with helping the disadvantaged groups. Since then, more research has shown that different approaches are needed for the different sexes, races, income groups and the disabled when dealing with factors that affect people's health and working to prevent disease.

Chapter 1. Health Care for the Mentally and Physically Impaired

1. **To provide more comprehensive care for the disabled, the President of the Republic issued an order of "People with Disabilities Rights Protection Act" on July 11, 2007.** The order said that physical and mental disabilities would no longer be looked at as a disease but rather as a functional issue related to eight major malfunction categories. To verify a disability, evaluation and a needs assessment has to be completed to obtain a disability certificate and enjoy disability services offered under the law. Evaluation was switched from doctors to committees composed of professionals in the medical, social work, special education and employment counseling fields. The committees used the new disability categories to complete an evaluation report and determine special needs. These were used to give people with disabilities appropriate welfare benefits and services.
2. **Article 5 of the "People with Disabilities Rights Protection Act" called for building a new evaluation system for the disabled. By the end of 2010, the following items were finished:**
   1) Modifying Tools Used to Evaluate Disabilities.
   2) Training Evaluators: Joining the classes were 273 medical professionals.
   3) Trial Tests for the New Disability Evaluation Tools.
   4) Work was completed on revising the 20 articles for the 2010 draft amendment to the "Regulations for Evaluating People with Disabilities."
3. **The DOH conducted the "Preventive Oral Health Services Plan for the Disabled" to train oral health proponents, dentists, volunteers, and medical association members.** In 2010 and half 2011 of, trainees progressed to teach 6,000 disabled people at their homes or through associations.

Chapter 2. Health Care for Residents of Mountain Areas and Offshore Islands and the Indigenous Peoples

For their special geographic environment, living conditions in mountain areas and offshore islands are, generally speaking, poorer; and supply of medical manpower is insufficient. They are a relatively less-privileged group in terms of medical care resources and health care. To improve the accessibility, comprehensiveness and continuity of health care for residents of mountain areas and offshore islands and the indigenous peoples, the Department has taken action with priority to integrate medical care resources in offshore islands, upgrade quality of medical care in mountain areas and offshore islands, strengthen functions of health stations, and actively promote the quality of medical manpower and enhance the emphasis on prevention and control of major diseases.

1. **Improvement of Hardware Facilities in Mountain Areas, Offshore Islands and Remote Areas:** through the end of June 2011, the DOH had agreed to subsidize six health centers undertaking rebuilding projects and 19 doing renovations. Repairs were also made on three helicopter pads in mountainous regions. Besides improving facilities, the DOH also gave equipment subsidies to health stations (rooms) in mountain area and offshore islands. Included were 115 pieces of information related equipment, 135 pieces of medical equipment, six mobile medical care vehicles, 62 mobile medical care motorcycles and one ambulance. For health stations (rooms) in indigenous communities in the plains, it approved subsidies for 64 pieces of information related equipment, 49 pieces of medical equipment and eight mobile medical care motorcycles. These projects improved medical services and equipment resources in remote regions, bridging the care gap between rural areas and the city.
2. **Continuous Fostering of Local Medical Manpower** The plan for the fostering of medical manpower in indigenous areas and offshore islands is continued. Graduates on government scholarship are sent back to work in their own townships. To encourage them to stay on job, in coordination with the Integrated Delivery System (IDS) of the National Health Insurance, medical personnel are subsidized to stay on after completion of their duties. In 2010, 72% of these medical personnel stayed on.
3. **The DOH encouraged people to work together on community health building programs, enhancing its work by integrating local resources.** In 2011, through its "Building Healthy Communities Program," in indigenous area and offshore islands it established two counseling centers and 85 community health building centers. It also commissioned the Medical Association for Indigenous Peoples of Taiwan and the Taiwan Health Promotion Association to provide assistance and guidance. Through creative competitions and media promotion, it raised people's understanding of health building in aboriginal communities and on outlying islands.
4. **In 2011, the DOH subsidized 40 sessions of the "Community Tribe Health Service Camp for College and University Students in Mountain Areas and Offshore Islands."**
5. **The DOH worked to improve medical information available in remote indigenous communities by forming shared information platforms.**
   1) The DOH set up 268 mobile medical stations at 39 health centers in 13 counties (including Hsinchu County), providing "mobile clinics" medical care to the tribes; and a "User-friendly Mother Tongue Clinic Registration System" to provide more convenient medical care services to the local residents, reducing the medical resource gap between cities and rural areas.
   2) The picture archiving and communication system (PACS) is set up; and health information systems are integrated. 31 health centers in Nanao Township, Yilan County were connected to the DOH-Hospital to improve the medical care quality in remote tribes.
6. **Protecting Health and the Rights to Medical Care for the residents of mountain areas and offshore islands**

   In coordination with the Integrated Delivery System of the National Health Insurance, the rights of the residents on offshore islands to medical care are protected through support of specialists. Four health bureaus in Penghu, Kinmen, Lienchiang and Taitung are subsidized to conduct tele-medical care continuously. Total is 24 connection points.
7. **Emergency Delivery of Patients in mountain areas and offshore islands.**
   1) A 24-hour DOH National Emergency Aero-medical Approval Center is set up.
   2) A set of Guidelines Governing Subsidies to Transportation Costs for Delivery of Critically Ill or Emergency Patients in Mountain Areas

and Offshore Islands for Medical Care is formulated to subsidize costs for transporting patients to Taiwan for medical care. In 2010 there were 27,528 patients from offshore islands who came to Taiwan for accepting treatment and received subsidies.

8. **To prevent tooth decay, molar pit and fissure sealing has been offered since 2010 to first and second graders in mountain regions and first grade students in plains townships are part of low-income families.**

Chapter 3. Health Care for Groups with Special Health Needs and New Immigrants

Section 1. Human Rights Protection and Care of Hansen's Disease Patients

1. The President of the Reublic promulgated the "Hansen's Disease Patient Human Rights Protection and Compensation Act" on August 13, 2008. It went into effect immediately and changed the terminology of the condition from leprosy to Hansen's disease.
2. The government offered compensation (sympathy payments) of NT$730 million and 626,662 to Hansen's disease sufferers. The 292 people at the Losheng Sanatorium received NT$500 million and 299,994, while 947 staying-at-home patients received NT$230 million and 326,668.
3. The Losheng Bridge was unveiled on January 24, 2011. The new Shengwang Square treatment area extended over the metro depot station to connect with the old Penglai treatment area, making treatment more convenient for residents.

Section 2. Prevention and Control of Rare Diseases

To Provide comprehensive medical care for rare disease patients, key measures the DOH undertook were as follows:

1. At the end of June 2011, the DOH had announced 185 rare diseases, 75 drugs for rare diseases, and 40 special food items and nutritional supplements geared toward rare disease sufferers. Furthermore, rare diseases are included for payment in the National Health Insurance under the category of critical illnesses and injuries and metal and physical impairment, alleviating the burden of co-payment when seeking medical attention. In 2011, subsidies were provided to supply 29 of the special food items and nutritional supplements and to stockpile nine kinds of emergency medicines.
2. To provide patients of rare diseases with comprehensive care, rare diseases are included for payment in the National Health Insurance under the category of critical illnesses and injuries and metal and physical impairment. A set of Regulations Governing Subsidies to the Medical Care of Rare Diseases is formulated to subsidize the medical costs of diagnosis, treatment, drugs and special nutrient food not covered by the National Health Insurance to provide rare disease sufferers and their families with genetic diagnoses and consultation along with strengthening rare diseases prevention and treatment promotional measures.
3. An amendment to the "Rare Disease Prevention and Medicine Act" was promulgated on December 8, 2010. It amended Article 6 and Article 33 to enhance prevention, screening and research for rare diseases and to provide patients with subsidies for the home medical equipment they needed to stay alive. These steps reduced occurrences of rare diseases and lowered the burden on caregivers.
4. To coordinate with the amendment to the "Rare Disease Prevention and Medicine Act," the DOH on April 7, 2011, formally announced amended articles to the "Regulations on Medical Subsidization for Rare Diseases." Besides continuing to provide patients with special foods and nutritional supplements, the DOH expanded subsidies for international examination fees. These subsidies were entirely geared toward

mid- and low-income households. The DOH also added additional subsidies for home medical equipment, local examinations, nutritional counseling and emergency treatment. For the local examinations and home medical equipment, families were able to retroactively apply for costs incurred from the beginning of 2011.

Section 3. Human Rights Protection and Care of the HIV-Infected

The Department has spared no efforts in the human rights protection and health care of AIDS patients. Taiwan is one of the few countries that provide the HIV-infected with free medical care. When HAART (highly active antiretroviral therapy) was first developed in 1997, it was immediately brought in to provide the infected with free cocktail therapy.

1. In the Protection of Human Rights

1) On December 17, 1990, the "AIDS Prevention and Control Act" was promulgated to effectively regulate the control of HIV infection and to protect the rights of the infected. The Act was amended on July 11, 2007, It was renamed the "HIV Infection Control and Patient Rights Protection Act".
2) Two sets of regulations, Regulations Governing Protection of the Rights of the HIV-Patients, and Operational Directions for Reviewing of Applications for Stay or Residence for HIV-Infected Individuals, have been formulated.
3) The "Regulations Governing Compensations to Persons Infected with HIV through Execution of Preventive Functions" were formulated to provide compensation for those who became infected through their work.
4) To provide timely assistance to people infected with AIDS, procedures were established for AIDS patients to report rights violations.

2. Health Care

1) Since the amendment of the AIDS Prevention and Control Act (now the HIV Infection Control and Patient Rights Protection Act) on February 5, 2005, free anti-HIV medications have been provided, and payment under the National Health Insurance has been extended to the non-insured HIV-infected to improve the coverage of medical care and accessibility to medical care. In 2010, 14,548 patients had been treated, at a rate of 85%.
2) To improve the effects of medical care for the HIV-infected, to encourage the HIV-infected in the self-management of health, a case-management project for HIV infection has been implemented since 2007. In 2010, 39 designated medical care institutions for HIV control were in this project to provide cases with education and counseling.
3) Through the follow-up management of county/city health bureaus and case-managers, patients are supervised to visit regularly the designated hospitals for treatment.
4) Private sector organizations and charity groups have been subsidized to assist in the care of cases, making arrangement for their medical care, and emergency placement.

Section 4. Health Care for the New Immigrants

1. Differences in language and cultural customs make new immigrants a disadvantaged group in terms of health. To protect their rights to proper health care, the DOH helped new immigrants join the NHI system. Other steps it took included the launch of the "Reproductive Health Management Plan for Parents from Foreign Countries and Mainland China." This provided new residents and their children with reproductive health counseling services and management of their NHI card. In 2010, the management rate of NHI cards for reproductive planning, breastfeeding, health during pregnancy, regular prenatal examinations and nutrition during pregnancy was 98.60%.
2. Ensuring the reproductive health of new immigrants before they have joined the NHI program is an important task. From 2005 to 2010, the DOH used regulations under the Ministry of the Interior's "Key Subsidy Points for the Guidance and Assistance Fund for Foreign

Spouses" and the "Subsidy Applications, Items and Standards for the Guidance and Assistance Fund for Foreign Spouses" to formulate the "Prenatal Health Subsidy Plan for Foreign Spouses without Household Registration." These plans were used to subsidize prenatal health checks for foreign spouses who were not yet a part of the NHI system. There was a limit of five NT$600 subsidy payouts per pregnancy. In 2010, these subsidies were used for prenatal health checks 10,024 times at a cost of more than NT$5.81 million. Starting from 2011, budget responsibility for the prenatal checks shifted to the DOH's Bureau of Health Promotion. Between January and June of that year, subsidies were used 5,022 times at a total cost of more than NT$2.91 million.

3. The DOH launched its "Translator Service Project for Foreign Spouses on Reproductive Health," working with local health centers to train translators who could assist new residents seeking health care information. A total of 190 health centers in 21 counties and cities joined the project in 2010, recruiting 364 translators. The DOH also produced reproductive health materials in many languages, including Vietnamese, Indonesian, Thai, English and Khmer. The materials ranged from pamphlets on reproductive health, women's health, and children's health to a reproductive health VCD series.

Section 5. Community-Based Long-Term Care for the Elderly with Dementia or Functional Disabilities

1. To provide appropriate, long-term care for this devastating disease, the DOH subsidized 18 home care families with special beds designed for dementia patients. These beds helped the families better care for their bed-stricken family members.
2. The DOH continues to promote dementia research. From 2011 to 2013, it is holding its "Dementia (Including Mild Cognitive Impairment) Pandemic Survey and Dementia Care Research Plan" to use as a basis for evaluating Taiwan's dementia care needs. It has also integrated dementia knowledge and techniques into training courses for long-term caregivers to improve quality of care.
3. Through an array of care systems, the DOH provides quality health care services to patients with dementia or functional disabilities and their family members as caregivers.
4. The DOH completed the implementation of the community-based care services for people with dementia or functional disabilities in 8 DOH-affiliated hospitals. As of the end of December 2010, the case number had reached 500 people, which is testament to the goal of long-term care in local care service for the elderly.

Section 6. Health Care for Oil Disease Patients

1. Health Care for Oil Disease Patients

1) An oil disease outbreak occurred starting in 1979 due to consumption of rice oil contaminated with PCBs. Worries arose starting in 2005 that future generations could be affected owing to contamination of the placenta or breast-milk. Therefore, the DOH launched a special care plan for children born after January 1, 1980 to mothers affected by the outbreak (these children were known as second-generation oil disease patients). Through the end of March 2011, 1,516 oil disease patients had benefited from this plan, including 1,306 first-generation patients and 210 from the second generation.
2) Health services provided to oil disease patients include: 1. promoting the "Regulations of Implementing a Treatment Plan for PCB Affected Patients" , 2.waiving copayments for first-generation oil disease patients when using any outpatient services, 3. waiving copayments for oil disease patients who bring their IC card or their yusho card when receiving outpatient or emergency services, 4. free annual health examinations, 5. continuing health oversight programs (including visits

and care programs), 6. opening of oil disease clinics in December 2009 at the DOH Fongyuan Hospital and Changhua Christian Hospital.

2. Taiwan-Japan Conference on Oil Disease Health Care

1) Understanding Japan's policies for dealing with Yusho patients is important because Taiwan can then use that knowledge when formulating its own policies. Therefore, on April 29, 2011, the DOH held the Taiwan-Japan Conference on Oil Disease Health Care. Invited speakers included Professor Masutaka Furue of Kyushu University; the secretary-general of the Yusho Support Center, Fujiwara Toshikazu; and the division director of the Goto City Health Division, Yoshitani Kiyomitsu. They gave speeches and discussed oil disease related issues with Taiwan scholars and officials. Also invited were health department representatives and members of oil disease associations.

2) The DOH invited oil disease patient representatives along with the director of the Yusho Disease Victims Support Association, Leon Guo, and other experts to engage in talks. The experts gained a better understanding of patient needs and patients gained a better understanding of DOH health services.

Chapter 4. Health Care for the Economically Disadvantaged

To ensure complete access to NHI medical care for people facing financial hardship, the DOH and the BNHI continue to promote measures to assist them in paying NHI fees, including financial relief for health insurance fees, installment plans, and referrals to charitable groups for assistance. (For more details, refer to part 7, the "National Health Insurance," section 6, "Assistance to Disadvantaged Groups." A summary follows:

1. The DOH continued its relief fund, providing interest-free loans for people to pay overdue insurance premiums and self-payment medical costs. The borrowers were able to begin paying back the loans one year after application. Through the end of June 2011, 5,579 loans were approved worth a total value of more than NT$353 million.
2. People with financial difficulties who could not afford to pay their insurance premiums in one payment were able to apply on an installment payment plan. Through the end of June 2011, the BNHI had helped 318,000 people arrange such a plan, with a total value of NT$7.746 billion.
3. The DOH continued to assist with referrals to charity groups (or charitable person) to help economically disadvantaged individuals pay for their insurance. With the support of these charitable organizations and individuals, 4,467 cases were successfully referred through the end of June 2011, with assistance funds totaling NT$20.91 million.
4. Four percent of revenues from the health and welfare surcharge levied on tobacco products were used to help economically disadvantaged people pay their health premiums. Through the end of June 2011, these funds had benefited over 530 thousand people, with subsidy amounts totaling NT$2.79 billion.
5. By 2011, the DOH had gained NT$411 million from Public Welfare Lottery profits. These revenues were used to execute 17 subsidy plans enacted by the Bureau of National Health Insurance and 15 local governments. Priority was given to low-income and other disadvantaged groups. Subsidies provided assistance with: health insurance copayments, health insurance premiums debts, hospital meal fees, transportation costs from remote regions, registration costs, other self-payment fees, service fees, personnel costs, and publicity fees. This assistance helped economically disadvantaged people overcome temporary problems to receive needed medical care. Through the end of August 2011, the program had benefitted 14,469 people at a cost of NT$328 million.

IX International Cooperation in Health

As international healthcare has gradually become the global standard, Taiwan is poised to explore niche opportunities available to a country with excellent quality, competitively-priced medical services. To that end, Taiwan is diligently promoting international exchange through joining international organizations, improving our international image, consulting foreign experts, and training internationally-minded healthcare professionals. In an effort to contribute and feed-back to world health, we are also developing a plethora of cooperation models to help the poor and needy in our global village.

Chapter 1. Joining International Health Organizations

Taiwan has diligently pursued joining international health organizations for years, focusing its efforts on becoming a member of the World Health Organization (WHO). Becoming an observer to the World Health Assembly (WHA) in 2009 both confirmed our nation's accomplishments in international healthcare and raised our global visibility.

Section 1. Joining the World Health Organization

Since our pursuit of WHO membership in 1997, Taiwan has held to the spirit of "diseases without borders." With the help and support of ally countries and friends around the world over the years of petitioning to join the WHO, the international community is coming to understand the importance of Taiwanese membership. Many major WHO member countries and international health organizations now openly support Taiwan's bid to join. Meanwhile, Taiwan continues to strive for a higher standard of public health, in line with international developments, to fulfill its obligations as a member of the international community.

Section 2. Current WHO Membership Status

Taiwan has been petitioning for WHO membership for 14 years, during which it has experienced enterovirus infections, SARS, and H1N1 outbreaks. In a world where national borders are becoming increasingly irrelevant in health-related operations, the legitimacy of Taiwan's bid for, and international support for Taiwanese membership in the WHO grows daily. Taiwan will continue to participate in international health forums and activities to fulfill its duties as a member of the global village and to earn international acknowledgement and support.

1. At the 64th annual WHA meeting, Taiwan actively participated in the assembly and technical briefings as an observer, with dignity and professionalism. Representatives from Taiwan spoke on 14 important topics, clearly demonstrating Taiwan's medical expertise, which was acknowledged by WHO members.
2. Taiwan actively attends other WHO professional conferences. Taiwan attended nine such technical conferences in the first half of 2011, on medical human resources, Chinese medicine and related topics, vaccine-related topics, and Japanese encephalitis, a testament to our promise to participate in and contribute to the international community.
3. In addition to petitioning that Taiwanese ports be placed on the WHO approved list of ports where ship sanitation control certificates may be obtained, the Taiwan Centers for Disease Control (CDC),, Department of Health, has implemented an appraisal and improvement program toward meeting the IHR (2005) core capacity requirements for designated ports. The CDC has consulted with Taiwan's allies on the necessary steps and drafted a plan to establish said capacity. An interdepartmental implementation team has been established to ensure that Taiwan meets the WHO-prescribed timelines for self-evaluation.

Chapter 2. International Exchange and Cooperation

To strengthen medical cooperation with allied countries, enhance medical and hygiene standards, fulfill our responsibility as a member of the international community, and to strive for

international recognition and acknowledgement, Taiwan is providing health and medical assistance to, as well as engaging in practical exchange with foreign countries through international organizations including: the Asia-Pacific Economic Cooperation (APEC) forum, Pan American Health Organization (PAHO), West African Health Organization (WAHO), and Organization for Economic Co-operation and Development (OECD).

Section 1. Participation in and Hosting of International Conferences, Symposia, and Consultation Meetings

1. International Conferences

1) Attended at the March 2011 APEC Health Working Group meeting in Washington DC.
2) Funding for the DOH's proposal to APEC for "Enhancing Hospital Safety and Responding to Public Health Emergencies by Applying RFID" has been approved.
3) Collaborator for the 2010 European Health Forum Gastein (EHFG). Representatives from Taiwan spoke at the forum and participated in discussions with top European health and medical experts and officials, where they exchanged policy and academic accomplishments, raising Taiwan's international visibility.
4) Former Minister of Health Yaung Chih-liang attended and gave a keynote speech at the "Illinois Public Health and Emergency Preparedness Summit" by invitation, after which he visited various health agencies in Washington DC, including the Agency for Healthcare Research and Quality (AHRQ), Office of Global Health Affairs (OGHA), and the National Institutes of Health's National Institute of Allergy and Infectious Diseases; Yaung also gave a public speech at the Center of Strategic and International Studies (CSIS).
5) To participate in the international effort to rebuild Haiti, Taiwan sent a delegation to the "World Summit on the Future of Haiti, Solidarity beyond the Crisis" in the Dominican Republic. The delegation met with then Haitian president René Préval and cabinet members following the summit to discuss planning items.
6) Formed a delegation with the National Fire Agency Special Search and Rescue Team, Taipei Fire Department, and Ministry of Foreign Affairs to the "2010 Dubai International Humanitarian Aid and Development Conference and Exhibition (DIHAD 2010), where we shared the results of our efforts in Haiti.
7) Hosted the 2010 Taiwan Health Forum, attended by over 200 foreign health leaders and officials from 20 countries, with keynote addresses and discussions on leadership, health and climate change, and health systems.

2. Symposia

1) Former Minister of Health Yaung Chih-liang attended the "Healthcare in Asia 2010" conference in Singapore, where he spoke on exploring the financial aspects of socialized medicine; Yaung also spoke at the Lee Kuan Yew School of Public Policy, and discussed healthcare with Singaporean Minister for Health Khaw Boon Wan.
2) Former Minister of Health Yaung attended and gave a keynote address at the 2010 Mid- to high-Level Administrator Training and U.S.-Taiwan Healthcare Round Table." At the conference, Yaung engaged in discussions and exchange with North Carolina's congressmen, the heads of 12 state health departments, and high-level public health NGO executives. Following the conference, Yaung gave a public speech on Taiwan's experience with universal healthcare at a U.C. Berkeley extension.
3) In November 2010, the DOH hosted the "Regional Economic Integration and Public Health: Current Health Issues and Future Challenges for Asia-Pacific Region" conference in Taipei.
4) The DOH hosted the "Conference on International Health and Trade" and the "2010 Cross-Straits Healthcare Regulation and Policy Conference" to explore important international public health and conflict resolution topics,

as well as fundamental problems with the healthcare laws of both nations.

3. Consultative Meetings

1) Attended the "14th Taiwan Australia Economics and Trade Advisory Conference" in April 2010, where a memorandum of understanding on pharmaceutical management cooperation was signed between the Taipei Economic and Cultural Office in Australia and the Australian Commerce and Industry Office Taipei was signed to facilitate exchange and cooperation between the two nations' respective food and drug administrations.
2) Attended the "35th Japan-Taiwan Economic and Trade Conference," co-hosted by the Association of East Asian Relations (AEAR) and Japan's Interchange Association, to discuss ten food safety and medical policy related items.

Section 2. Exchange and Cooperation

1. Implemented the "2010 Promotion Program for Healthcare Cooperation with Central and South American Nations" to donate medical equipment to, and train healthcare personnel in Belize and Honduras.
2. Implemented the "2010 Promotion Program for Healthcare Cooperation with West African Nations" to train healthcare personnel in Gambia and Ghana, and to establish a joint healthcare R&D laboratory in Ghana.
3. Implemented the "2010 Promotion Program for Healthcare Cooperation with African Nations" to hold disaster prevention and response training courses for the Kisumu region, in cooperation with the Great Lakes University of Kisumu (Kenya); hosted the "2010 SADC Regional Forum for HIV Cross Border Patient Challenges," which took place in South Africa.
4. Signed the "Cross-Strait Agreement on Medical and Health Cooperation" on December 21, 2010 (effective June 26, 2011), which proposed cooperation in the areas of "contagious disease prevention and treatment," "medical product safety management and R&D," "Chinese medicine research, exchange, and safety management," and "emergency care."
5. To strengthen Chinese medicine related exchange and internationally promote the practice of traditional medicines, the DOH established the "International Collaborating Center for Traditional Medicine" on June 22, 2010.
6. Organized the "2010 CAM/TM Professional Training Program" on June 22-28 at China Medical University, Taiwan.
7. Attended at the March 8th, 2011 APEC Health Working Group meeting in Washington DC, where we discussed and promoted our national policy, implementation measures, and accomplishments in healthy aging, as well as gave an address on the "Proactive Approach towards Healthier Aging and Healthier Community."
8. At the 13th 2010 European Health Forum Gastein (EHFG) on October 6-9, titled "Health in Europe—Ready for the Future?" the DOH co-hosted a parallel forum on "Healthy Aging—Demographic Change and the Future of Health." In addition to sharing Taiwan's healthy aging policy implementation results, we gathered practical experiences from health systems around the world as a valuable reference for the future direction of Taiwan's national policy on an aging population.
9. Presentation of the poster titled "Contraceptive use after unplanned pregnancy terminated by induced abortion: An observation from a recent fertility survey in Taiwan" at the 138th Annual Meeting of the American Public Health Association (on the theme of "Social Justice"), which took place on November 6-10, 2010 in Denver, Colorado (USA).
10. Attended the June 11-12, 2010 session of the "2010 Conference of the Parties (COP) of the WHO Framework Convention on Tobacco Control (FCTC)," where Taiwan was able to share its experience with the FCTC, promote international exchange, and participate in tobacco use prevention work in developing countries through NGOs.

Section 3. Education and Training

1. In 2010, the Taiwan Health Center (THC) in the Republic of the Marshall Islands hosted four educational training sessions and conferences for nursing and medical staff on oral health

and chronic disease in the community; three Marshall Island nurses were also invited to Taiwan for clinical training in respiratory therapy and hemodialysis.

2. In 2010, the Taiwan Health Center (THC) in the Solomon Islands engaged in the training of parasite screening and prevention technicians, and in maternity and pediatric healthcare, collaborating with other government organizations providing aid to the islands to edit educational materials and host educational training.
3. From 2010 through June 2011, the Taiwan International Healthcare Training Center (TIHTC) trained 190 healthcare personnel from 20 countries in clinical medicine, healthcare management, public health and national health insurance, as well as acupuncture and traditional Chinese medicine.

Chapter 3. International Medical Aid

In the face of new challenges posed by globalization, where diseases easily cross borders and health issues have no national boundaries, the DOH has tirelessly promoted international cooperation in health and medical aid. These efforts help to raise Taiwan's profile in the international community and promote the expansion of Taiwan's health diplomacy.

Section 1. Medical Aid

The Taiwan International Health Action (TaiwanIHA) team was immediately dispatched following the January 2010 earthquake in Haiti. Following the implementation of Taiwan's "Post-Earthquake Disaster Haiti Reconstruction Assistance Program," three three-year sub-programs were proposed:

1. Taiwan Health Center (THC): Implemented by the DOH Tao-Yuan General Hospital, which led a delegation to Haiti for an onsite inspection on June 10-21, 2011; the delegation donated eight blood glucose and blood pressure monitors and other medical supplies to Haiti's Artibonite Department health authority.
2. Medical Equipment Donation: Implemented by the DOH Tao-Yuan General Hospital, in collaboration with the Global Medical Instruments Support & Service (GMISS) Program. Second-hand medical devices collected from Taiwanese hospitals by GMISS arrived in Haiti on February 5, 2011, and was officially handed over to Minister of Health Dr. Alex Larsen in a gifting ceremony held by our local embassy. Nine Taiwanese-made portable oxygen concentrators (POC), purchased by the Tao-Yuan General Hospital, arrived in Haiti in March and were distributed to nine local hospitals.
3. Epidemic Prevention:

   At the onset in October of the 2010 cholera outbreak in Haiti, the DOH CDC sent two shipments of examination equipment through the epidemic prevention program to Haiti for use by the Laboratoire National de Sante Publique (LNSP). The DOH later signed a cooperation agreement with the LNSP on March 2, 2011 to train medical examiners and epidemic disease experts, and to supply Haiti with disease prevention resources and equipment.

Section 2. Medical Assistance

1. In March 2010, President Ma led a delegation to our six Pacific region ally countries to promote effective cooperation and sustainable development.
2. Establishment of the Global Medical Instruments Support & Service (GMISS) Program to provide ally and friendly countries with medical equipment. Between January 2010 and June 2011, 18 donations, comprising 749 pieces of medical equipment, were made to 12 countries.

Chapter 4. Globalized Medical Services

1. Development Background

   Many Southeast Asian countries have been promoting medical tourism in recent years, the most successful ones being Korea, Singapore, Thailand, and lately, India. Each of these governments has developed unique medical tour

packages, which have, in turn, created many job opportunities and invigorated their local service industries. Taiwan must take full advantage of its position as a hub for Asian economic activity, the excellence of its medical professionals, and its advanced medical technologies to create opportunities for its people and to facilitate the development of the domestic healthcare industry.

2. Development Goals

At the core of Taiwan's international healthcare promotion are our excellent medical personnel, high-tech medical treatments, and friendly service. Its integration with the tourism industry provides both great developmental opportunities for the local healthcare industry and an impetus for high-value technical services development on the island. Through an integrated marketing mechanism to improve the brand image of Taiwanese medical services, international healthcare will be a force for comprehensive national development and make "Served by Taiwan" the new international label denoting our economic success.

3. Implementation Results

1) The "Medical Service Internationalization Flagship Project" is listed as a key development item in the "Economic Development Vision for 2015: First-Stage Three-Year Sprint Program" (implemented in 2006); it is also noted among the 2009 Six Emerging Industries, and of the Ten Major Service Industries.

2) Implementation of the "International Healthcare Implementation Plan"; the DOH is charged with establishing an international healthcare management working group, which would serve as a domestic information exchange and integration platform. The group had assisted over 30 healthcare facilities joining the platform to service the 15,843 medical tourists to Taiwan in 2010.

3) Establishment of the International Healthcare Comprehensive Planning Team, comprised of industry experts, scholars, and related government agencies, to facilitate the gathering and distribution of sources for international healthcare promotion.

4) Lobbying for deregulation:

a) On January 11, 2010, legislators announced that foreign language advertisements promoting Taiwanese healthcare services were no longer banned.

b) On January 25, 2010, legislators announced the revised "Certification Regulations for Hospital Establishment and Expansion," which dictates that hospitals must apply to the DOH for permission to create an international healthcare ward, which must not exceed 10% of the number of regular bed spaces, must be segregated from other wards, and is not eligible to receive national health insurance reimbursements.

c) Developing a revised Medical Care Act to deregulate private healthcare facilities, established as for-profit businesses, which cater specifically to international healthcare patients. Said revisions were submitted for Legislative Yuan review on March 4, 2010.

d) Facilitating discussions between the Ministry of Foreign Affairs and National Immigration Agency to simplify and normalize visa procedures for foreigners and mainland Chinese seeking medical treatment in Taiwan, which would greatly facilitate the growth of the medical tourism industry.

5) Implementation of the "Comprehensive Marketing Plan for International Healthcare" in 2010. The Plan established ten overseas offices to provide assistance for medical tourists to Taiwan; it also assisted 12 local hospitals with signing cooperation contracts with the California-based U.S. Taiwan Health Care Company, to facilitate their insurance clients coming to Taiwan for medical treatment.

6) Implementation of the "Integrated Marketing Plan for International Healthcare," which is currently seeking to create promotional videos with international-renowned media bodies.

X Medical Science and Technology Research

The Department focuses on "science, technology and welfare" as its goal of science and technology development and formulates relevant policies by evidence-based research to promote national health and medical care.

In 2009 and 2010, the DOH promoted research in the fields of health and medical care, pharmaceuticals, food, and bio-technology. These programs include "National Science and Technology Research Project" , "Priority Science and Technology Projects" , and "General Science and Technology Research Projects" with the total budget of NT$ 5.106 billion and NT$ 4.303 billion (see Figure 10-1).

Chapter 1. Projects Promoted with Priority

Important Research Results and their Dissemination

1. Integration of Substance Addiction Project

1) The DOH has established different reference materials about the special characteristics of 60 kinds of recently abused drugs (such as the date-rape drug flunitrazepam and new variations of ecstasy), including medical characteristics, clinical results, and the toxicity threat they pose to the nervous system. The DOH has also conducted analysis of drug busts in "home parties" in Taiwan and established a databank of drug structure diagrams and images.

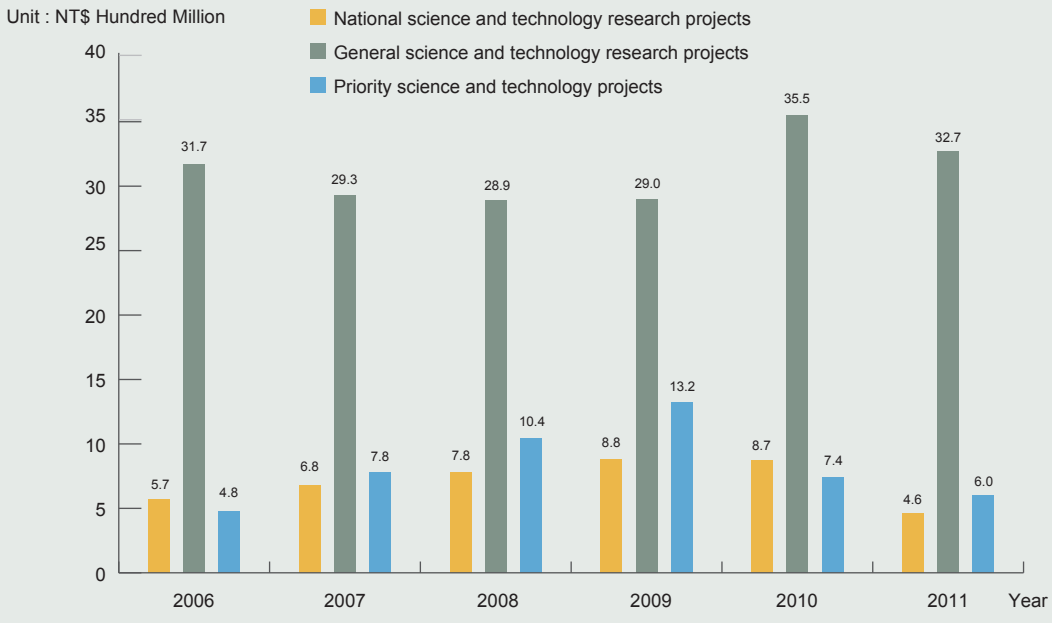
2) There is a clear link between opiate use during pregnancy and pain response pathways that develop in the child. Pain via those pathways may be triggered when those children grow up and are re-exposed to opioids. This link should be a consideration when figuring drug-treatment doses for pregnant women. In particular efforts should be made to reduce potential future side effects from methadone and Buprenophrene.

2. Food Safety and Nutrition Research Projects

1) The DOH has set food-safety risk-assessment and management policies, including controls designating maximum permissible levels of potentially harmful substances that occur during food processing, as well as limits on pesticide residues in agricultural products.

2) The DOH completed the seventh iteration of

Figure 10-1 Allocation of Funds for Science and Technology Research



its draft guidelines on good nutrition for ROC citizens. These guidelines will serve as a basis for future policy statements by the TFDA, as well as the basis for drawing up its "Daily Dietary Guidelines" and "Food Guides."

3. Chronic Kidney Disease Control

The DOH established an integrated prevention and treatment model and assessed a cross-disciplinary treatment model for chronic kidney disease.

4. Tuberculosis Control Integrated Project

The DOH has researched and developed a four-in-one fixed-dose combination tablet for the treatment of tuberculosis. According to current clinical trials data, it is predicted that this will become a front-line medicine in the battle against TB. What's more, in the future, the direction of this research should focus on reducing the number of pills that patients must take, so as to increase medication compliance and raise patients' comfort levels.

5. RFID in Healthcare pioneer project

To raise the quality of hospital services and patient safety, the DOH has put a focus on adopting Radio Frequency Identification (RFID) systems (used in conjunction with hospitals' medical information systems) for care-treatment procedures used with hospital in-patients (including those relating to managing renal care, drug automatic identification systems, and operating room ergonomics). Hospitals adopting RFID have demonstrated an increase in hospital bracelet recognition from 80% to 100%. There were also clear efficiency gains for renal-care management and employment of medication automatic identification systems.

6. Research and development for evidence-based public health policies

In carrying out research focused on pathological changes to the kidneys of diabetic patients, who constitute the largest group of chronic-disease sufferers requiring renal dialysis, it was discovered that diabetics who are long-term smokers, or proteinuria sufferers, or who have poor glycemic control, poor blood-pressure control, or insulin resistance, have double the chance of developing kidney disease. This research result can be employed by the government to gain better control over the risk factors that increase the chances of diabetic patients developing kidney disease, thus raising the quality of diabetes care and reducing the number of people that require dialysis.

7. Taiwan Human Vaccine Program (including mass-production technologies)

1) On October 26, 2010 the enterovirus 71 vaccine was cleared for its first clinical trials with human subjects. Those tests were expected to be completed by the end of 2011. They represent the first government-approved clinical testing of an enterovirus vaccine in Asia. Meanwhile, the first steps to transfer this technology to domestic pharmaceutical manufacturers were taken.
2) The H5N1 vaccine has been transferred to domestic biotechnology firms, and the first clinical trials on human subjects have already been completed. It was anticipated that the final report on the human trials would be ready in the second quarter of 2011.

Chapter 2. General Projects

Section 1. General Science and Technology Research Projects

1. Projects on Science and Technology Research Policies in Health and Medical Care

1) The DOH developed and analyzed over 200 kinds of indicators for the first course of treatment for 10 forms of cancers common in Taiwan (including breast cancer, colorectal cancer, oral cavity cancer, lung cancer, liver cancer, cervical cancer, prostate cancer, bladder cancer, esophageal cancer and stomach cancer).
2) The DOH established a large-linked database (LLDB) to carry out real-time active post-marketing surveillance of the H1N1 vaccine. After analyzing the connections between

independently collected data from vaccine records (regarding exposure) and adverse events (medical prognoses), it was discovered that there was no immediately obvious statistical correlations.

3) Research examining the performance of the Reformed Hospitals Accreditation System has demonstrated that during the campaign promoting hospital reform, overall quality was moving in a positive direction. When asked about various criteria for judging the success of these new systems (including patient safety, patient participation and integrated care), about 70% of hospital staff and members of the public alike were positive, affirming the importance of the reforms in improving the overall quality of hospitals in recent years.

2. Mid-term Plan for Pharmaceutical Science Development

1) The DOH completed developing its four-hour curriculum on "differentiating commonly confused Chinese herbal medicines sold in Taiwan" as well as a DVD made for the course.

2) The DOH established an assessment system for domestically developed flu vaccines, which led to a handheld spectrophotometer PTS (portable test system) for quick and accurate readings of cellular endotoxins. Meanwhile, it continued to monitor the quality of 2010 flu vaccines. There are testing results for a total of 38 different lots of flu vaccine, all of which have met ROC pharmacological standards.

3) The Center for Drug Evaluation has come up with preliminary suggestions for establishing a process for pricing new medicines under the National Health Insurance system. The new process will help raise efficiency and service quality. What's more, to increase transparency, the Center provides information and interacts with the public, the academic community and industry through the pharmaceutical technology assessment section of its website.

3. Establishing a food-hazard early warning system

The DOH set policies on food risk assessment and management, including rules about safe amounts of pesticide residue and about the amount of potentially hazardous substances that can be safely used during food processing. It also established background values and risk-assessment data with regard to food additives, antibiotics, and veterinary drugs.

4. Excellence for Clinical Trial and Research Program

The program carried out 498 Asia-Pacific clinical trials, 693 new drug or new medical device clinical trials (including those sponsored by manufacturers), and 473 research studies that doctors carried out themselves. Physicians at the Clinical Trial Center of the National Taiwan University Hospital assumed the leadership role for 22 international clinical trial programs, as study chairman or steering committee members. Their roles in these projects are very meaningful for the establishment of the National Center for Excellence for Clinical Trials and Research. Participating in these important research projects

can change the standard treatment guidelines for many diseases (such as the approval of Sorafenib, the first drug that works for liver cancer patients) as well as expedite the marketing of a drug (such as accomplished by Afatinib's second and third clinical trials).

5. Plan for mid-term medical biotech research

1) Oncology research: DOH research has discovered that when the tumor of a pancreatic cancer patient carries "14 genomic imprinting," then the patient has less than one year to live on average. Otherwise, the patient can go on to live over three years. This finding is very meaningful in terms of clinical treatment. What's more, it was discovered that the signaling pathway expression and activation of the transcription factor Nrf2 in the endothelial cells can serve as a biomarker of early betel-nut-related oral cavity cancer and an indicator of a patient's carcinogenesis. The Taiwan Cooperative Oncology Group has published two books that are reference materials for doctors: the Clinical Practice Guidelines for the Diagnosis and Treatment of Prostate Cancer and the Clinical Practice Guidelines for the Diagnosis and Treatment of Colon-Rectal Cancer.
2) Infectious disease research: The sixth Taiwan Surveillance of Antimicrobial Resistance has revealed that the rate of multidrug-resistant bacteria in hospitals and communities around Taiwan is still high and in some cases even increasing. The most obvious increase is in carbapenem-resistant acinetobacter baumannii (CRAB).
3) An empirical study on medical and health policies and on healthy aging: Research was conducted on 3,700 people to gain understanding about the prevalence of chronic diseases among middle-aged and elderly populations in Taiwan. The research also looked at how these people's risk factors, mobility, life quality and health behaviors may have had an effect on whether they later developed chronic diseases, become mobility impaired or suffered inferior life quality. The results of the study have been used as a reference for the planning of the nation's health-care service system and for promoting the government's health policies for the elderly.
4) Cardiovascular medical research: Experiments on mice show that cysteine-rich protein 2 (CRP2) plays an important role in preventing vascular injury and atherosclerosis. Therefore, maintaining or boosting this protein's activity in the blood vessels will help to slow down atherosclerosis.
5) Research on environmental health and occupational medicine: Research shows that exposure to diesel exhaust is closely correlated with the level of myoglobin (an indicator of myocardial infarction). Therefore, it can be inferred that car mechanics exposed to diesel exhaust may be at a higher risk of developing cardiovascular diseases. A different study used animal testing to confirm that simultaneous exposure to arsenic and second-hand smoke increases the level of 8-OHdG (a biomarker for DNA-damage) and causes emphysema.
6) New drug discoveries and technology transfers: In July and November 2010 respectively, the U.S. Food and Drug Administration and the TFDA approved a first-phase of clinical trials for DBPR104, a new small-molecule anti-cancer drug, on human subjects. The trials will be conducted at the National Cheng Kung University Hospital in Tainan. Meanwhile, pre-clinical studies have begun on DBPR108, a new small molecule anti-diabetic drug, developed by the NHRI and several private pharmaceutical companies. Clinical trials on human subjects are expected to begin in 2012.
7) Bioinformatics and genetic epidemiology research: MamPhEA, a web tool for knockout mouse phenotypes analysis, was developed for biotech and genome researchers. The tool allows researchers to conduct large-scale

tests and analysis of the functional properties of mouse gene sets in the post-genomic era. The tool has already been made available.

8) Biotechnology research: The research team was able to use only two non-cancer-causing genes (OCT4 and SOX2) to turn human umbilical vein cells into induced pluripotent stem cells (iPS cells). The research finding raises possibilities for clinical applications. Additionally, the team also developed a new mesoporous silica nanosphere-based oral drug delivery system. This site-specific system can deliver drugs directly to the colon as well as control their releases. It effectively prevents drugs from dissolving in the gastrointestinal tract, so as to make them more site-specific and reduce the problem of side effects.

Chapter 3. National Science and Technology Research Projects

1. **National science and technology projects on network communications: epidemiological research on the health effects of electromagnetic fields**

   The report, Establishment of Quantification Model for Assessment of the Human Exposure to Electromagnetic Fields, was published, aiming to provide some basis for epidemiological research. The report provides such data as individuals' electromagnetic radiation time-weighted averages, which are calculated based on measurements taken by an electromagnetic field-strength meter, as well as a survey of individuals' activity patterns.

2. **National Nano Science and Technology Project—Application of Nanotechnology in Biomedicine and Relevant Legal Regulations**

   In 2009, the DOH started its National Nano Science and Technology Project. Several guidelines and regulations have been drafted or amended in relation to some 30 nano-related products (nano drugs, medical devices, cosmetics and food). In 2010, a Q&A on nano foods was compiled to promote public understanding of nano-food risks.

3. **National Research Program for Genomic Medicine—Research on Medical Health Service Applications**

   A research study under this project discovered how the tobacco-specific carcinogen NNK induces cancer and provided scientific evidence of how quitting smoking will help decrease the chance of getting cancer. Apart from providing a new therapeutic target, the research results can also be used as scientific evidence to support campaigns that encourage people to quit smoking. The research was featured in the cover story of The Journal of Clinical Investigation in 2010 (Volume 120) and attracted US media interviews. In 2010, a genome research on the effect of siwutang (a traditional Chinese herbal preparation) on endometriosis and ovarian cancer was carried out. It was discovered that the herbal preparation can act to suppress endometriosis and ovarian cancer cells. The detailed mechanism of how it works has yet to be confirmed. In addition, it was found that during the early stages of ovarian cancer, combing siwutang and regular western medical treatments can help lower the dosage of chemotherapy needed. As a result, the side effects of chemotherapy can be minimized.

4. **National Science and Technology Projects for Biotechnology and Pharmaceuticals-Promotion of Clinical Trial and Translational Medicine**

   In 2010, an in-vitro diagnostic reagent for cervical cancer was successfully developed. In the future, a four-gene methylation test will be able to detect cervical precancerous lesions early. What's more, when combined with the use of a self-sampling device that was developed locally, the testing result will be as accurate as a hospital screening. That accuracy and convenience should lead to more regular screenings among women.

XI Health and Medical Care Information

With the Internet growing increasingly pervasive and information technology advancing with each passing day, medical care has incorporated more and more information technology so as to strengthen hospital management and raise medical care quality and services. The DOH has continued to promote the "National Health Informatics Project" (NHIP) and the "Expediting Smart Healthcare Project" so as to realize the goal of facilitating holistic healthcare, to provide a supportive environment for healthcare information, to develop innovative healthcare-information service models, and to raise the efficiency of how medical resources are used.

Chapter 1 Digitization of Healthcare Administration

The DOH has planned and developed various kinds of health-information services, applications and management systems in order to strengthen cross-agency information flow and raise healthcare efficiency. In conjunction with the restructuring of the Executive Yuan, the DOH has adopted the principle of permitting no interruption of services so as to ensure a smooth transition.

Section 1. Health Information Services

1. Medical affairs management systems provide the DOH and local public-health agencies with a framework for managing medical, pharmaceutical, nursing and psychiatric rehabilitation institutions; medical personnel; administrative disciplinary actions; specified medical instruments; and the continuing education credits of medical personnel. To ensure that the data in the system are accurate, in order to protect the rights of medical personnel and medical institutions, and to exercise better control over the distribution of resources, the DOH on September 23, 2010 set up a website, where authorized personnel and institutions can check over their data. Medical personnel can log in with their medical personnel IC cards to proofread and confirm their own individual data. And the presidents of medical institutions can log on to check institutional data.
2. An on-line platform for reporting the number of available beds in intensive-care units and an automatic notification function for reporting deaths have been put in place. By the end of June 2011, 200 hospitals that provide emergency medical services have participated in the ICU bed-reporting system, and 167 hospitals have participated in the death notification system.
3. The DOH has continued to urge healthcare personnel to report, give referrals, and manage cases that involve attempted suicides and mental and physical disabilities, so as to reach out to those who need follow-up care. In 2010, the suicide-prevention reporting system reported 27,361 cases, and the mental and physical disability assessment system reported 69,783 cases.
4. The DOH oversees the operation of 343 websites belonging to local public health agencies. These websites offer health information and related services to the public.
5. An online application system has been set up for the public. It offers services such as form downloads, application tracking, notifications about pickups, and authentication for those applying for certification. Furthermore, the system also links to the e-payment platform of the Research, Development and Evaluation Commission of the Executive Yuan and the payment systems of all major banks and convenience-store chains.
6. In order to completely digitize DOH's document systems, the DOH introduced safety mechanisms such as electronic certification and electronic signatures. It also developed a system for signing documents online (which included functions of document creation and management, file management, and integration of various systems). The system was implemented in November of 2010.

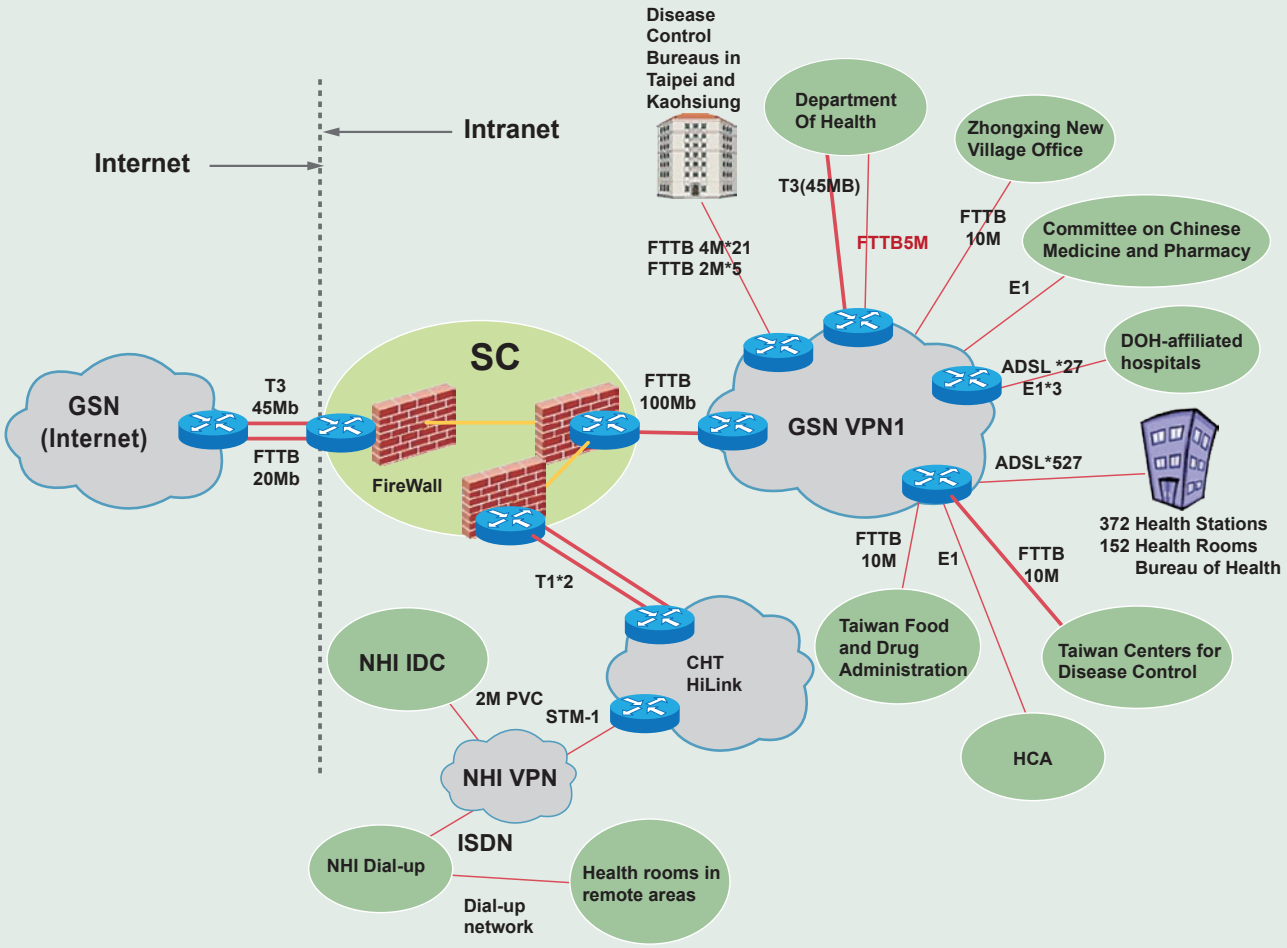
Section 2. The Application-Integration Platform for the Public Health Information System

The DOH has established a service-oriented public-health information system platform and portal. As of June 2011, the DOH had set up a single sign-on mechanism for 80 web systems of the DOH and its subordinate agencies; constructed a centralized platform that integrated the services from 163 common applications; used a suicide-prevention reporting system and mental-healthcare system as models to develop a common-case management system that cut down the workload of public health personnel by avoiding duplication of case data; and assisted local public-health agencies in establishing a security certificate system to bolster information safety.

Section 3. The Health Information Network

The Health Information Network (HIN) is the ROC's hub for exchanging and sharing medical and health information (see Figure 11-1). The responsibilities of the network's service center include: operating various shared-information systems; providing consultation services to network members; managing information security;

Figure 11-1 Framework of the HIN Network



inspecting local public health agencies' information environment and helping them boost their efficiency and quality; and bridging the digital divide between urban and rural areas.

Section 4. Information Security

To ensure the information and communication security of the DOH and the Health Information Network, a mechanism for providing total protection and surveillance was established. Its components included firewalls, intrusion-prevention systems, anti-virus systems, webpage filtering, spam filtering, vulnerability assessments, and source-code analyses and repairs. Furthermore, to comply with the ISO 27001:2005 (an information-security management system standard), the DOH integrated the information-security management systems of its own information center, the service center of the Health Information Network, and the Healthcare Certification Authority. Its compliance was audited and certified. The DOH also offered various information-security training sessions to raise the awareness and capabilities of medical and health personnel in terms of information security.

Chapter 2. Medical Care Services and Applications

The Department of Health has been promoting the "National Health Informatics Project" (NHIP) and the "Expediting Smart Healthcare Project," aiming to create a supportive IT environment so as to foster the development of health information technology and facilitate medical records integration, thus reducing the number of duplicate medical tests, examinations and prescriptions, and raising the efficiency of how medical resources are used. So as to improve healthcare quality and patient safety, the DOH has also been accelerating the push for hospital computerization, the adoption of electronic medical records (EMR), and EMR interoperability.

Section 1. Promoting Electronic Medical Records (EMR)

To help hospitals and clinics legally and safely digitize their medical records and to increase their willingness to do so, the DOH has drawn up strategies related to four major categories: regulations, standards, safety and promotion. As of June 2011, the following steps had been taken:

1. The DOH formulated standards for EMR interoperability, finished digitizing 117 different medical record forms, and established a mechanism to ensure compliance to EMR standards, so as to ensure the completeness and accuracy of these records.
2. The DOH coached hospitals on how to digitize their medical records in accordance with the Regulations Governing the Development and Management of Electronic Medical Records. So far 227 hospitals have adopted the system.
3. The DOH has been checking the regulatory compliance of various medical institutions' EMR systems. So far 148 hospitals have passed.
4. As of the end of 2010, 93 hospitals have received ISO 27001:2005 certification for meeting international information security standards. So as to promote EMR interoperability, in 2010 the DOH instituted the "Electronic Medical Records and EMR Interoperability Subsidy Program," which offered inspections of participating hospitals' EMRs and their interoperability. As of the end of 2010, a total of 133 hospitals had passed muster. To continue to promote widespread adoption of electronic medical records, on June 1, 2011 the DOH announced it was once again implementing the incentive-based "Electronic Medical Records and EMR Interoperability Subsidy Program."

Section 2. Operation of the Healthcare Certification Authority

The Healthcare Certification Authority (HCA) formally began operations on June 13, 2003. On August 19, 2008, it was brought under the Government Root Certification Authority (GRCA) to

provide certification services and a mechanism for electronic signatures.

So as to boost the safety of medical credential keys, beginning on January 1, 2011, the HCA began issuing 2048-bit, rather than 1024-bit, keys. As of June 2011, it had issued 311,411 medical IC cards. These cards can be used in the following areas: EMR systems, health-information reporting platforms, public-health information portals, regional medical-information platforms, management of teaching hospitals' tuition subsidies, psychiatric-care information management, first-aid care management, joint purchasing networks for pharmaceutical products, medical personnel online application systems, application and cancellation of multiple-certificate online insurance, online birth notifications, disease-prevention information exchange centers, centralized communicable disease tracking systems, community medical information management, hospitals' electronic document exchanges, National Health Insurance IC card reading, etc.

Section 3. Establishment of an Image Exchange/Reading Center

So as to reduce the number of duplicate medical examinations and tests, and to raise the quality of hospital care and reduce medical expenditures, in 2009, in conjunction with the "Economic Revitalization Policy: Project to Expand Investment in Public Works," the DOH established the Image Exchange/Reading Center (IEC/IRC), providing a platform for different hospitals to exchange medical images and interpretations of them. With this platform, the DOH was able to provide image reading and interpretation-support services for health agencies located in remote areas. The service provides patients with high-quality, convenient and efficient care, and helps ameliorate the problem of insufficient medical specialists in remote communities.

From the end of 2010, when the IEC/IRC was completed, until the end of June in 2011, the IEC/IRC had provided readings of 54,734 medical images (including 3,576 for public health agencies in the mountains and outer islands, and 51,158 for DOH-affiliated hospitals).

Section 4. RFID Establishment Program

So as to enhance medical-care quality and patient safety in DOH-affiliated hospitals, the DOH ran a pilot scheme at the Taichung Hospital for a radio-frequency identity device (RFID) system. The technology helps to raise patient medication safety, streamline inpatient care procedures, speed up patient identification, track valuable medical instruments, and so forth.

A total of 11 RFID systems have already been developed and implemented in the following areas: inpatient care and kidney dialysis procedures, inpatient tracking, special-patient monitoring, patient safety, automatic inventory control of drugs, digital health education for patients, illustrated medication identification, injection-fluid management, high-value instrument management, operating room flow and ergonomics management, and operating-room patient-identification.

Section 5. Promoting Computerization and Digitization of Local Health Agencies in Remote Areas

Due to the special environmental characteristics of remote areas like the mountains or outer islands, including their low population density and inconvenient transportation, medical resources are fragmented and lacking in those places, and it is difficult to make effective use of the medical system. Medical services in these areas typically demonstrate a distinct backwardness in terms of the computerization and digitization of their resources. Consequently, they require the implementation of hospital information systems (HIS) and picture archiving and communication systems (PACS) to provide linkage to other larger supporting hospitals and IDS hospitals.

1. So as to enable comprehensive and high-quality

medical care to penetrate remote regions, the DOH adopted a staggered approach to slowly establish the HIS system over several years. From 2006 to 2010, it established the system at 268 locations of 39 different local public-health agencies in 13 different counties. What's more, over the course of several years, the DOH has also established PACS (including remote access) in 31 local public health agencies, which provided links to DOH hospitals. The support of the specialists at those major hospitals has allowed those remote locales to increase the accuracy of diagnoses, and it has reduced the number of patients that need to be transferred to other hospitals later, increasing the ability of local public-health agencies to provide real-time diagnoses, preventing the needless duplication of medical services, and raising the quality of medical services offered.

2. Achievements:

1) A prototype of an outpatient health databank in Pingtung County Health Bureau
2) Image Reading Centers at the DOH's Fengyuan and Taoyuan hospitals.
3) According to the HIS statistics, the 39 local public-health agencies received 785,287 outpatient visits in 2010 and 313,889 visits in the first half of 2011. Based on the transportation cost of NT$1,900 per person per visit to the city and back, by not having to go to the hospitals in the city, patients have saved more than NT$2 billion in transportation costs alone.
4) As for the statistics on the 31 PACS set up at local public health agencies, in 2010 there were 2,296 medical images that were stored and read on the system, and in the first half of 2011 there were 1,203 images stored. These allowed patients to save NT$6.65 million on transportation costs.
5) In order to promote the computerization and digitization of medical resources in remote mountain regions and the outer islands, the DOH participated in the 11th Healthcare Quality Improvement Campaign. The DOH won a "Highest Potential" award and a "Best Newcomer" award for its project "Healthcare Upgrade with Mobile Smartcare" based on the theme of "smartcare circle."

Section 6. Promoting Added-Value Healthcare IT Applications

1. With the core values of "protecting the privacy of individuals' health information while advancing the sharing of health information and reducing duplicate inputs of resources," the DOH, in order to reach the targets of sharing health information, established the Collaboration Center of Health Information Applications in 2008. The center's goal is to add value to individuals' health data and

create collective information that has application values, so that they can be used as reference materials to advance the quality of public health policies, aid related academic research, and upgrade healthcare services, thereby advancing the people's welfare.

2. In September of 2010, the Center held separate information meetings in northern, central and southern Taiwan. Topics included sharing experiences in the use of health-related databases, as well as providing an introduction to the Center and an explanation of its services (the scope and usage limitations of its health databases, the application process for accessing the databases, fees, and basic skills needed to use the databases). On January 1, 2011, the Center formally opened. Information about the Center's scope of services, application procedures and charges are available online.

Chapter 3. Online Services

In an effort to raise the public's health literacy and to bolster medical counseling services, the DOH set up "Taiwan e Doctor" and "Formosans e Medical School" online in order to give people quick access to accurate health and medical information.

Section 1. "Formosan e Medical School" —a medical e-learning platform

1. To raise the public's understanding of preventive care, to teach patients with chronic diseases and their families how to care for themselves, and to provide medical professionals with professional development opportunities, the DOH has asked various medical institutions, societies and foundations in Taiwan to design digital multimedia courses about the 13 chronic diseases that are most often among the 10 leading causes of death in Taiwan in any given year.
2. In 2010 and 2011, the DOH introduced a series of digital courses to train the staff of local public-health agencies. Topics have included field epidemiology, public and media communications, women's and children's health, physical activities, community cancer prevention and screening initiatives, health promotion, health education, healthy behaviors, healthy diet, teen health and sex education, chronic-disease prevention and control, community resource management, and so forth.

   There are 215 courses (369.5 hours) altogether, aimed at four categories of students: the general public, medical professionals, continuing-education students, and local public health agency personnel.

Section 2. Taiwan e Doctor—Medical Consultation Services

1. To bolster its services to the public, the DOH established the Taiwan e Doctor website to provide free professional consultation services online about medical conditions, rare diseases, pharmaceutical products, nutrition, preventive care, and so forth.
2. The website is staffed by 249 doctors, nine dietitians, 31 pharmacists, and eight nurses from 38 public and private hospitals. Drawn from 32 medical specialties, including internal medicine, obstetrics-gynecology, and dermatology, these medical professionals answer questions, offer free medical consultation services and direct people to treatment, and provide fast and accurate health and dietary knowledge as well as information about medical care and drugs.
3. From August 15, 2000 (when it was first established) to the end of June 2011, there were a total of 46,677 entries in its Q&A column. These entries have been sorted into 2,176 frequently asked questions. In 2010, there were a total of 3,640 entries. The Hsinchu Branch of the National Taiwan University Hospital, Chang-Hua Hospital and Taoyuan General Hospital are the hospitals most frequently asked about. Urology, obstetrics-gynecology, and dermatology are the medical specialties most frequently asked about.

Appendix

Appendix 1. Health Indicators

Table 1 Population Statistics

Year	Total Population	Population Composition			Dependent population index	Sex Ratio (male per 100 female)	Crude Birth Rate (CBR)	Crude Death Rate (CDR)	Natural Increase Rate (NIR)	Life Expectancy			Population Density (Persons/ km²)
		Aged under 15	Aged 15-64	Aged over 65						Total	Male	Female	
	(1,000 persons)	%	%	%	%		‰	‰	‰	years	years	years	
1995	21,357	23.77	68.60	7.64	45.78	106	15.50	5.60	9.90	74.53	71.85	77.74	590
1996	21,525	23.15	68.99	7.86	44.94	106	15.18	5.71	9.47	74.95	72.38	78.05	595
1997	21,743	22.60	69.34	8.06	44.22	106	15.07	5.59	9.48	75.54	72.97	78.61	601
1997	21,929	21.96	69.79	8.26	43.30	105	12.43	5.64	6.79	75.76	73.12	78.93	606
1999	22,092	21.43	70.13	8.44	42.60	105	12.89	5.73	7.16	75.90	73.33	78.98	610
2000	22,277	21.11	70.26	8.62	42.32	105	13.76	5.68	8.08	76.46	73.83	79.56	616
2001	22,406	20.81	70.39	8.81	42.07	104	11.65	5.71	5.94	76.75	74.06	79.92	619
2002	22,521	20.42	70.56	9.02	41.72	104	11.02	5.73	5.29	77.19	74.59	80.24	622
2003	22,605	19.83	70.94	9.24	40.97	104	10.06	5.80	4.27	77.35	74.77	80.33	625
2004	22,689	19.34	71.19	9.48	40.48	104	9.56	5.97	3.59	77.48	74.68	80.75	627
2005	22,770	18.70	71.56	9.74	39.74	103	9.06	6.13	2.92	77.42	74.50	80.80	629
2006	22,877	18.12	71.88	10.00	39.12	103	8.96	5.95	3.01	77.90	74.86	81.41	632
2007	22,958	17.56	72.24	10.21	38.43	102	8.92	6.16	2.76	78.38	75.46	81.72	634
2008	23,073	16.95	72.62	10.43	37.70	102	8.64	6.25	2.40	78.57	75.59	81.94	637
2009	23,120	16.34	73.03	10.63	36.93	101	8.29	6.22	2.07	79.01	76.03	82.34	639
2010	23,162	15.65	73.61	10.74	35.85	101	7.21	6.30	0.91	(f)79.24	(f)76.15	(f)82.66	640

Notes: 1. Economic growth rate is calculated by actual GDP.
2. (f) deontes estimates.
Source: Department of Statistics, Ministry of the Interior.

Table 2 Health and Medical Expenditures

Year	Annual Economic Growth Rate	Per Capita GDP	Private Final Consumption on Health Care Expenditure	% of GDP	% of Private Consumption	Net Government Expenditures (Fiscal Year)	Health Expenditures as % of Net Government Expenditures	National Health Expenditure of DOH and Affiliated Organizations as % of Total Central Government Expenditures (Fiscal Year)	National Health Expenditure as % of GDP	Consumer Price Indices	Medical Care Price Indices
	%	USD $	NTD $ million	%	%	NTD $ million	%	%	%	Year 2006 = 100	
1995	6.4	12,918	297,442	4.09	7.15	1,910,066	1.53	0.85	5.25	89.58	76.32
1996	5.5	13,428	337,254	4.27	7.36	1,843,786	1.57	0.78	5.36	92.33	77.60
1997	5.5	13,810	373,197	4.35	7.51	1,878,764	1.51	0.79	5.35	93.17	79.44
1998	3.5	12,598	409,417	4.45	7.65	1,992,593	1.37	0.66	5.43	94.73	80.18
1999	6.0	13,585	445,716	4.62	7.87	2,050,004	1.31	1.15	5.60	94.90	82.96
2000	5.8	14,704	468,162	4.60	7.82	3,140,936	1.28	0.85	5.53	96.09	86.08
2001	-1.7	13,147	490,076	4.94	8.13	2,271,755	1.17	1.07	5.88	96.08	87.23
2002	5.3	13,404	525,273	5.05	8.42	2,144,994	1.29	1.10	5.96	95.89	88.36
2003	3.7	13,773	552,375	5.16	8.63	2,216,514	1.54	1.14	6.15	95.62	91.29
2004	6.2	15,012	594,186	5.23	8.73	2,245,047	1.48	1.15	6.20	97.17	93.09
2005	4.7	16,051	626,961	5.34	8.84	2,291,999	1.22	1.11	6.24	99.41	96.80
2006	5.4	16,491	645,441	5.27	8.90	2,214,226	1.39	1.44	6.25	100.00	100.00
2007	6.0	17,154	679,179	5.26	9.05	2,290,169	1.42	1.61	6.16	101.80	103.91
2008	0.7	17,399	708,184	5.61	9.31	2,343,585	1.47	1.30	6.45	105.39	106.17
2009	-1.9	16,353	741,037	5.94	9.78	2,670,898	1.34	1.59	6.87	104.47	106.81
2010	10.9	18,588	767,004	5.64	9.71	2,727,261*	...	...	...	105.48	107.50

1. Source: Annual Financial Report, Ministry of Finance.
2. *deontes estimates

Table 3 Important indicators of medical manpower and facilities

Year	Medical Care Institutions											
	No.	Hospitals							Clinics			
		No.	Western Medicine			Chinese Medicine			No.	Western Medicine	Chinese Medicine	Dentistry
			No.	Public No.	Private No.	No.	Public No.	Private No.		No.	No.	No.
1995	16,109	787	688	94	594	99	1	98	15,322	8,683	1,933	4,706
1996	16,645	773	684	94	590	89	1	88	15,872	9,009	1,987	4,876
1997	17,398	750	667	95	572	83	2	81	16,648	9,347	2,165	5,136
1998	17,731	719	647	95	552	72	2	70	17,012	9,473	2,259	5,280
1999	17,770	700	634	96	538	66	2	64	17,070	9,378	2,317	5,375
2000	18,082	669	617	94	523	52	2	50	17,413	9,402	2,461	5,550
2001	18,265	637	593	92	501	44	2	42	17,628	9,425	2,544	5,659
2002	18,228	610	574	91	483	36	2	34	17,618	9,287	2,601	5,730
2003	18,777	594	558	91	467	36	2	34	18,183	9,565	2,729	5,889
2004	19,240	590	556	88	468	34	2	32	18,650	9,819	2,852	5,979
2005	19,433	556	531	79	452	25	1	24	18,877	9,948	2,900	6,029
2006	19,682	547	523	79	444	24	1	23	19,135	10,066	3,006	6,065
2007	19,900	530	507	79	428	23	1	22	19,370	10,197	3,069	6,104
2008	20,174	515	493	79	414	22	1	21	19,659	10,326	3,160	6,173
2009	20,306	514	496	79	417	18	1	17	19,792	10,361	3,217	6,214
2010	20,691	508	492	81	411	16	1	15	20,183	10,599	3,289	6,295

Source: Office of Statistics, Department of Health

Table 3 Important indicators of medical manpower and facilities

Year	Hospitals by levels of accreditation																	
	Medical center		Regional hospital		District hospital		Teaching hospital		Reformed hospital (excellent)		Reformed hospital (qualified)		psychiatric hospital		Reformed psychiatric hospital (excellent)		Reformed psychiatric hospital (qualified)	
	No.	Beds	No.	Beds	No.	Beds	No.	Beds	No.	Beds	No.	Beds	No.	Beds	No.	Beds	No	Beds
1995	14	19,375	44	22,342	505	44,750	63	15,860	…	…	…	…	30	8,368	…	…	…	…
1996	14	19,919	45	24,099	479	44,369	68	18,463	…	…	…	…	28	8,126	…	…	…	…
1997	16	22,151	51	28,282	468	42,834	69	17,514	…	…	…	…	26	8,348	…	…	…	…
1998	17	23,405	51	28,974	469	44,621	67	18,143	…	…	…	…	27	8,395	…	…	…	…
1999	18	24,555	51	27,883	426	42,327	66	18,446	…	…	…	…	32	8,709	…	…	…	…
2000	23	27,473	63	33,820	387	36,080	49	13,277	…	…	…	…	32	9,399	…	…	…	…
2001	24	28,389	66	35,381	401	36,104	47	13,168	…	…	…	…	35	9,703	…	…	…	…
2002	23	29,398	71	40,761	385	35,860	41	11,468	…	…	…	…	36	9,450	…	…	…	…
2003	23	30,301	72	42,158	372	34,922	42	11,765	…	…	…	…	37	10,493	…	…	…	…
2004	24	31,195	72	43,628	359	35,952	42	12,594	…	…	…	…	37	10,879	…	…	…	…
2005	22	30,552	64	39,536	352	38,584	41	13,453	…	…	…	…	38	11,153	…	…	…	…
2006	24	31,786	55	37,616	344	37,602	37	11,961	-	-	15	7,198	37	11,176	-	-	-	-
2007	23	32,439	20	14,970	306	28,254	23	7,714	24	15,979	59	24,683	29	7,239	7	3,537	4	1,092
2008	17	22,565	-	-	208	16,129	8	2,189	51	35,435	146	33,610	3	1,006	7	3,537	30	7,473
2009	7	8,379	-	-	112	6,918	1	135	22	28,147	67	44,326	221	34,356	-	-	7	3,527
2010	-	-	-	-	-	-	-	-	34	39,430	88	52,696	290	29,456	-	-	8	3,959

Note: 1. Before 2005, the medical center category includes would-be medical centers.
2. Before 2000, the regional hospital category includes would-be regional hospitals.
3. Before 2000, the psychiatric hospital category includes psychiatric teaching hospitals
4. In 2006, the categories of reformed hospital (excellent), reformed hospital (qualified), reformed psychiatric hospital (excellent), and reformed psychiatric hospital (qualified) were added.
5. The various hospitals among the Taipei City Hospitals have different accreditation results; the most common result is listed here.
6. Yuli Veterans Hospital of the Executive Yuan's Veterans Affairs Commission was accredited as qualified in the reformed psychiatric hospital category and excellent in the reformed hospital category. The two ratings are listed separately.
7. The Yuli Hospital was rated as qualified in both the reformed psychiatric hospital and the reformed hospital categories. The two ratings are listed separately.

Source: Office of Statistics, Department of Health

Table 3 Important indicators of medical manpower and facilities

Year	Primary Health Care Units					No. of Beds					Per 10,000 population							
	Health Stations						No. of Beds in Hospitals			No. of Observation Beds in Clinics		No. of Beds in Hospitals						Clinics
		Taiwan Province	Taipei City	Kaohsiung City	Kinmen and Matsu			Public	Private			Acute general beds	Acute psychiatric beds	Chronic general beds	Chronic psychiatric bed	Special beds	Hemodialysis beds	
	No.	No.	No.	No.	No.	Beds	Beds	Beds	Beds	Beds	Beds	Beds	Beds	Beds	Beds	Beds	Beds	Beds
1995	369	338	12	11	8	112,379	101,430	39,922	61,508	10,949	52.78	30.12	1.22	2.38	5.01	7.16	1.76	5.13
1996	369	338	12	11	8	114,923	104,111	40,125	63,986	10,812	53.39	30.61	1.59	2.18	4.49	7.60	1.90	5.02
1997	369	338	12	11	8	121,483	108,536	41,421	67,115	12,947	55.87	30.46	1.73	2.38	4.71	8.58	2.06	5.95
1998	369	338	12	11	8	124,564	111,941	42,838	69,103	12,623	56.80	30.98	1.80	2.29	5.11	8.76	2.10	5.76
1999	369	338	12	11	8	122,937	110,660	39,440	71,220	12,277	55.65	30.84	2.10	2.28	3.93	8.63	2.32	5.56
2000	369	338	12	11	8	126,476	114,179	40,129	74,050	12,297	56.77	31.03	2.25	2.40	4.38	8.61	2.59	5.52
2001	363	332	12	11	8	127,676	114,640	39,670	74,970	13,036	56.99	30.27	2.27	2.17	4.44	9.24	2.77	5.82
2002	363	332	12	11	8	133,398	119,847	41,904	77,943	13,551	59.24	30.89	2.37	2.19	4.70	10.13	2.93	6.02
2003	372	340	12	12	8	136,331	121,698	42,777	78,921	14,633	60.31	30.77	2.46	1.91	4.89	10.74	3.08	6.47
2004	372	339	12	12	9	143,343	127,667	43,865	83,802	15,676	63.18	31.87	2.59	1.95	5.13	11.55	3.19	6.91
2005	372	339	12	12	9	146,382	129,548	44,273	85,275	16,834	64.29	31.80	2.64	1.94	5.51	11.75	3.26	7.39
2006	372	339	12	12	9	148,962	131,152	44,076	87,076	17,810	65.12	31.88	2.65	1.83	5.71	11.87	3.39	7.79
2007	372	339	12	12	9	150,628	131,776	44,873	86,903	18,852	65.61	31.94	2.77	1.75	5.78	11.52	3.48	8.21
2008	372	339	12	12	9	152,901	133,020	45,450	87,570	19,881	66.37	31.87	2.86	1.71	5.93	11.69	3.53	8.63
2009	371	339	12	12	8	156,740	134,716	45,913	88,803	22,024	67.79	32.06	2.92	1.68	5.95	15.50	3.57	9.53
2010	372	312	12	39	9	158,922	135,401	45,981	89,420	23,521	68.61	32.01	2.99	1.63	6.03	15.64	3.65	10.15

Source: Office of Statistics, Department of Health

Table 3 Important indicators of medical manpower and facilities

Year	No. of Medical Personnel in Practice												
	No.	Physicians (Western Medicine)	Physicians (Chinese Medicine)	Population Served Per Physician (including Chinese Medicine Doctors)	Dentists	Population Served per Dentist	Pharmaceutical Personnel	Population Served per Pharmaceutical Personnel	Nursing Personnel	Population Served per Nursing Personnel	Medical Technologists (Including Assistants)	Medical Radiology Technologists (including Technicians)	Dietitians
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
1995	118,242	24,465	3,030	777	7,026	3,040	19,224	1,111	57,585	371	4,722	1,793	298
1996	123,829	24,790	2,992	775	7,254	2,967	19,667	1,094	62,268	346	5,034	1,453	293
1997	137,829	25,730	3,299	749	7,573	2,871	21,246	1,023	70,447	309	5,389	2,266	515
1998	144,070	27,168	3,461	716	7,900	2,776	22,761	963	71,919	305	5,583	2,485	575
1999	152,385	28,216	3,546	696	8,240	2,681	23,937	923	76,252	290	6,015	2,500	656
2000	159,212	29,585	3,733	669	8,597	2,591	24,404	913	79,734	279	6,230	2,761	743
2001	165,855	30,562	3,979	649	8,944	2,505	24,891	900	83,281	269	6,542	3,152	778
2002	175,444	31,532	4,101	632	9,206	2,446	25,355	888	90,058	250	6,725	3,410	845
2003	183,103	32,390	4,266	617	9,551	2,367	25,033	903	95,747	236	7,055	3,557	895
2004	192,611	33,360	4,588	598	9,868	2,299	26,079	870	101,924	223	7,122	3,704	978
2005	199,734	34,093	4,610	588	10,141	2,245	26,750	850	105,183	216	7,323	3,880	1,056
2006	206,959	34,899	4,743	577	10,412	2,197	27,412	835	109,521	209	7,457	4,052	1,137
2007	214,748	35,849	4,862	567	10,740	2,138	28,040	819	114,179	201	7,642	4,211	1,239
2008	223,623	37,142	5,112	545	11,093	2,077	28,741	802	119,093	193	7,896	4,443	1,379
2009	233,553	37,880	5,290	536	11,351	2,037	29,587	781	125,081	184	8,203	4,651	1,563
2010	241,156	38,887	5,354	524	11,656	1,987	30,001	772	129,163	179	8,377	4,913	1,687

Source: Office of Statistics, Department of Health.

Table 4 Pharmaceutical Affairs

Year	No. of Pharmaceutical Units	Pharmacies			Medicine Dealers			Pharmaceutical Manufacturers		
			Owned and Operated by Pharmacists	Owned and Operated by Assistant Pharmacists	Western Medicines	Chinese Medicines	Medical Devices	Western Medicines	Chinese Medicines	Medical Devices
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
1995	34,846	4,862	2,386	2,476	9,074	9,631	10,609	253	249	168
1996	37,176	6,438	3,243	3,195	7,563	9,585	12,948	242	238	162
1997	38,583	6,707	3,443	3,264	7,020	9,123	15,098	243	218	174
1998	39,027	6,434	3,436	2,998	6,466	9,217	16,262	243	217	188
1999	40,322	6,349	3,422	2,927	6,457	9,229	17,627	244	208	208
2000	43,641	6,397	3,491	2,906	6,359	11,161	19,016	243	207	258
2001	47,130	6,440	3,600	2,840	6,524	12,864	20,560	257	202	283
2002	49,752	6,990	3,983	3,007	6,526	13,202	22,268	244	200	322
2003	51,447	7,155	4,193	2,962	6,751	12,799	23,950	243	171	378
2004	52,685	7,435	4,465	2,970	6,759	12,712	24,924	244	171	440
2005	55,802	7,673	4,691	2,982	6,875	12,682	27,641	241	150	540
2006	57,976	7,397	4,598	2,799	6,941	12,577	30,062	238	129	632
2007	59,061	7,381	4,663	2,718	6,848	12,505	31,280	244	121	682
2008	58,834	7,215	4,628	2,587	6,630	12,234	31,650	245	111	749
2009	58,524	7,450	4,902	2,548	5,370	11,481	32,963	280	134	846
2010	60,222	7,558	5,049	2,509	5,388	11,308	34,593	292	130	953

Notes: No. of pharmacies in 2010 includes 2,916 retail stores selling Chinese medicine besides Western medicine.
Source: Office of Statistics, Department of Health.

Table 5 Food Sanitation

Year	Laboratory Testing for Food Sanitation		Inspections for Food Sanitation Establishments	Disqualified								Incidents of Food Poisoning		
		Disqualification ratio		Under Supervision or To Be Improved		Fined		Suspended		Transferred to Court			No. of Cases	No. of Deaths
	Piece	%	Store	Store	%	Store	%	Store	%	Store	%	Piece	Person	Person
1995	40,410	10.51	237,189	20,390	8.60	1,316	0.55	6	0.00	-	-	123	4,950	-
1996	38,475	10.11	210,942	22,229	10.54	2,903	1.38	95	0.05	-	-	178	4,043	-
1997	38,606	10.49	197,042	16,582	8.42	1,051	0.53	29	0.01	-	-	234	7,235	1
1998	38,141	8.72	179,485	16,821	9.37	1,035	0.58	34	0.02	-	-	180	3,951	-
1999	37,773	8.09	181,818	19,020	10.46	37	0.02	10	0.01	-	-	150	3,112	1
2000	67,020	4.42	181,865	20,363	11.20	152	0.08	8	0.00	-	-	208	3,759	3
2001	34,907	8.56	166,195	20,069	12.08	104	0.06	59	0.04	-	-	178	2,955	2
2002	33,971	8.57	158,583	15,978	10.08	69	0.04	9	0.01	-	-	262	5,566	1
2003	36,220	10.06	177,102	15,525	8.77	104	0.06	8	0.00	-	-	251	5,283	-
2004	37,158	6.89	150,698	13,426	8.91	118	0.08	10	0.01	-	-	274	3,992	2
2005	39,395	6.36	182,575	15,218	8.34	51	0.03	5	0.00	-	-	247	3,530	1
2006	39,539	…	165,208	24,376	14.75	108	0.07	19	0.01	6	0.00	265	4,401	-
2007	38,729	…	156,794	27,769	17.71	94	0.06	11	0.01	4	0.00	240	3,223	-
2008	43,545	6.04	143,779	34,177	23.77	65	0.05	81	0.06	6	0.00	269	2,921	-
2009	38,770	6.84	150,675	32,463	21.55	92	0.06	18	0.01	6	0.00	361	4,644	-
2010	38,044	6.55	136,456	28,967	21.23	131	0.10	5	0.00	3	0.00	503	6,880	1

Source: Office of Statistics, Department of Health.

Table 6 National Health Insurance

Year	No. of Persons Under Social Insurance		Outpatient visits per capita	No. of Inpatients per 100 Insured Persons	Average Costs Per Outpatient Visit (NTD$)	Average Costs Per Inpatient Care (NTD$)	Average Days of Hospital Stay
		As % of Total Population	National Health Insurance	National Health Insurance	National Health Insurance	National Health Insurance	National Health Insurance
	1000 Persons	%	No.	No.	No.	No.	No.
*1995	19,123	89.5	10.6	10.1	530	29,418	9.4
1996	20,041	93.1	13.6	11.7	549	31,935	9.0
1997	20,492	94.2	14.3	11.6	557	32,760	8.8
1998	20,757	94.7	15.0	11.8	588	34,851	8.8
1999	21,090	95.5	15.3	12.3	614	36,098	8.7
2000	21,401	96.1	14.7	12.6	631	36,478	8.7
2001	21,654	96.6	14.5	13.0	659	37,169	8.8
2002	21,869	97.1	14.5	13.5	707	39,160	9.1
2003	21,984	97.3	14.3	12.4	746	43,343	9.6
2004	22,134	97.6	15.5	13.6	776	46,914	9.7
2005	22,315	98.0	15.5	13.4	792	49,212	9.9
2006	22,484	98.3	14.7	13.0	840	50,216	9.9
2007	22,803	99.3	14.8	13.0	857	50,809	10.0
2008	22,918	99.5	14.9	13.3	899	51,475	10.2
2009	23,026	99.6	15.5	13.7	914	51,374	10.2
2010	23,074	99.6	15.6	13.9	932	51,267	10.3

Notes: * denotes that data was only available from March to December in 1995.
Source: Bureau of National Health Insurance.

Table 7 Causes of Death

Year	All Causes		Malignant Neoplasms			Heart Diseases			Cerebrovascular Diseases			Pneumonia			Diabetes		
	No.of Deaths	Mortality per 100,000 population	Rank	No.of Deaths	Mortality per 100,000 population	Rank	No.of Deaths	Mortality per 100,000 population	Rank	No.of Deaths	Mortality per 100,000 population	Rank	No.of Deaths	Mortality per 100,000 population	Rank	No.of Deaths	Mortality per 100,000 population
1995	117,954	554.6	1	25,841	121.5	4	11,256	52.9	2	14,132	66.5	8	3,070	14.4	5	7,225	34.0
1996	120,605	562.5	1	27,961	130.4	4	11,273	52.6	2	13,944	65.0	8	3,200	14.9	5	7,525	35.1
1997	119,385	551.8	1	29,011	134.1	4	10,754	49.7	2	12,885	59.6	7	3,619	16.7	5	7,500	34.7
1998	121,946	558.5	1	29,260	134.0	3	11,030	50.5	2	12,705	58.2	7	4,447	20.4	5	7,532	34.5
1999	124,991	567.9	1	29,784	135.3	4	11,299	51.3	3	12,631	57.4	7	4,006	18.2	5	9,023	41.0
2000	124,481	561.1	1	31,554	142.2	3	10,552	47.6	2	13,332	60.1	8	3,302	14.9	5	9,450	42.6
2001	126,667	567.0	1	32,993	147.7	3	11,003	49.2	2	13,141	58.8	8	3,746	16.8	5	9,113	40.8
2002	126,936	565.1	1	34,342	152.9	3	11,441	50.9	2	12,009	53.5	7	4,530	20.2	4	8,818	39.3
2003	129,878	575.6	1	35,201	156.0	3	11,785	52.2	2	12,404	55.0	7	5,099	22.6	4	10,013	44.4
2004	133,679	590.3	1	36,357	160.5	2	12,861	56.8	3	12,339	54.5	6	5,536	24.4	4	9,191	40.6
2005	138,957	611.3	1	37,222	163.8	3	12,970	57.1	2	13,139	57.8	6	5,687	25.0	4	10,501	46.2
2006	135,071	591.8	1	37,998	166.5	3	12,283	53.8	2	12,596	55.2	6	5,396	23.6	4	9,690	42.5
2007	139,376	608.2	1	40,306	175.9	2	13,003	56.7	3	12,875	56.2	6	5,895	25.7	4	10,231	44.6
2008	142,283	618.7	1	38,913	169.2	2	15,726	68.4	3	10,663	46.4	4	8,661	37.7	5	8,036	34.9
2009	142,240	616.3	1	39,917	173.0	2	15,093	65.4	3	10,383	45.0	4	8,358	36.2	5	8,229	35.7
2010	144,709	625.3	1	41,046	177.4	2	15,675	67.7	3	10,134	43.8	4	8,909	38.5	5	8,211	35.5

Notes: 1. Data have been coded in ICD-10 since 2008.
2. Chronic diseases of lower respiratory tract can only be found coded in the ICD-10 digit coding system.
Source: Office of Statistics, Department of Health.

Table 7 Causes of Death

	Accidents			Chronic diseases of lower respiratory tract			Chronic liver diseases and cirrhosis			Suicide and Self Inflicted Injury			Nephritis, nephrotic syndrome and nephrosis		
	Rank	No.of Deaths	Mortality per 100,000 population	Rank	No.of Deaths	Mortality per 100,000 population	Rank	No.of Deaths	Mortality per 100,000 population	Rank	No.of Deaths	Mortality per 100,000 population	Rank	No.of Deaths	Mortality per 100,000 population
1995	3	12,983	61.1	…	4,017	18.9	6	4,456	21.0	11	1,618	7.6	7	3,519	16.6
1996	3	12,422	57.9	…	4,310	20.1	6	4,610	21.5	11	1,847	8.6	7	3,547	16.5
1997	3	11,297	52.2	…	4,457	20.6	6	4,767	22.0	10	2,172	10.0	8	3,504	16.2
1998	4	10,973	50.3	…	4,961	22.7	6	4,940	22.6	10	2,177	10.0	8	3,435	15.7
1999	2	12,960	58.9	…	5,046	22.9	6	5,180	23.5	9	2,281	10.4	8	3,474	15.8
2000	4	10,515	47.4	…	4,717	21.3	6	5,174	23.3	9	2,471	11.1	7	3,872	17.5
2001	4	9,513	42.6	…	5,159	23.1	6	5,239	23.5	9	2,781	12.4	7	4,056	18.2
2002	5	8,489	37.8	…	5,226	23.3	6	4,795	21.4	9	3,053	13.6	8	4,168	18.6
2003	5	8,191	36.3	…	5,192	23.0	6	5,185	23.0	9	3,195	14.2	8	4,306	19.1
2004	5	8,453	37.3	…	5,292	23.4	7	5,351	23.6	9	3,468	15.3	8	4,680	20.7
2005	5	8,364	36.8	…	5,484	24.1	7	5,621	24.7	9	4,282	18.8	8	4,822	21.2
2006	5	8,011	35.1	…	4,969	21.8	7	5,049	22.1	9	4,406	19.3	8	4,712	20.7
2007	5	7,130	31.1	…	4,914	21.4	7	5,160	22.5	9	3,933	17.2	8	5,099	22.3
2008	6	7,077	30.8	7	5,374	23.4	8	4,917	21.4	9	4,128	17.9	10	4,012	17.5
2009	6	7,358	31.9	7	4,955	21.5	8	4,918	21.3	9	4,063	17.6	10	3,999	17.3
2010	6	6,669	28.8	7	5,197	22.5	8	4,912	21.2	11	3,889	16.8	10	4,105	17.7

Notes: 1. Data have been coded in ICD-10 since 2008
2. Chronic diseases of lower respiratory tract can only be found coded in the ICD-10 digit coding system.
Source: Office of Statistics, Department of Health.

Table 8 International Comparison

Year	Life Expectancy												Crude Birth Rate					
	Taiwan		Japan		US		Germany		UK		South Korea		Taiwan	Japan	US	Germany	UK	South Korea
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female						
	Years	Years	Years	Years	Years	Years	Years	Years	Years	Years	Years	Years	‰	‰	‰	‰	‰	‰
1995	71.9	77.7	76.4	82.9	72.5	78.9	73.3	79.7	74.0	79.2	69.6	77.4	15.5	9.6	14.8	9.4	12.6	16.0
1996	72.4	78.0	77.0	83.6	73.1	79.1	73.6	79.9	74.3	79.5	70.1	77.8	15.2	9.7	14.7	9.7	12.6	15.3
1997	73.0	78.6	77.2	83.8	73.6	79.4	74.0	80.3	74.6	79.6	70.6	78.1	15.1	9.5	14.5	9.9	12.5	14.8
1998	73.1	78.9	77.2	84.0	73.8	79.5	74.5	80.6	74.8	79.8	71.1	78.5	12.4	9.6	14.6	9.7	12.3	13.8
1999	73.3	79.0	77.1	84.0	73.9	79.4	74.7	80.7	75.0	79.8	71.7	79.2	12.9	9.4	14.5	9.4	11.9	13.2
2000	73.8	79.6	77.7	84.6	74.1	79.5	75.0	81.0	75.5	80.2	72.3	79.6	13.8	9.5	14.4	9.3	11.5	13.4
2001	74.1	79.9	78.9	84.9	74.4	79.8	75.6	81.3	75.7	80.4	72.8	80.0	11.7	9.3	14.1	8.9	11.3	11.6
2002	74.6	80.2	78.3	85.2	74.5	79.9	75.7	81.3	76.0	80.6	73.4	80.5	11.0	9.2	14.2	9.0	11.3	10.3
2003	74.8	80.3	78.4	85.3	74.4	80.1	75.8	81.3	76.2	80.5	73.9	80.8	10.1	8.9	14.1	8.6	11.7	10.2
2004	74.7	80.8	78.6	85.6	75.0	80.0	76.5	81.9	76.8	81.0	74.5	81.4	9.6	8.8	14.0	8.5	12.0	9.8
2005	74.5	80.8	78.6	85.5	74.9	80.7	76.7	82.0	77.1	81.2	75.1	81.9	9.1	8.4	13.9	8.4	12.0	9.0
2006	74.9	81.4	79.0	85.8	75.0	80.8	77.2	82.4	77.3	81.7	75.7	82.4	9.0	8.7	14.2	8.2	12.4	9.2
2007	75.5	81.7	79.2	86.0	76.0	81.0	77.4	82.7	77.0	82.0	76.1	82.7	8.9	8.7	14.3	8.3	12.8	10.0
2008	75.6	81.9	79.0	86.0	75.5	80.5	77.0	83.0	78.0	82.0	76.0	83.0	8.6	8.7	14.3	8.3	12.9	9.4
2009	75.9	82.5	80.0	86.0	75.7	80.6	78.0	83.0	78.0	82.0	77.0	83.0	8.3	8.5	13.5	8.1	13.0	9.0
2010	76.2	82.7	…	…	…	…	…	…	…	…	…	…	7.2	8.5	…	…	…	…

Source: The WHO and the OECD website.

Appendix 2. Number of Notifiable Diseases

Table 1 Number of Confirmed Cases of Acute Infectious Diseases, 2010

Category	Disease	Total	Indigenous	Imported
I	Smallpox	0	0	0
	Plague	0	0	0
	SARS	0	0	0
	Rabies	0	0	0
	Anthrax	0	0	0
	H5N1 Influenza	0	0	0
II	Diphtheria	0	0	0
	Typhoid Fever	33	22	11
	Dengue Fever	1,896	1,592	304
	Dengue Hemorrhagic Fever/Dengue Shock Syndrome	21	18	3
	Meningococcal Meningitis	7	7	0
	Paratyphoid Fever	12	0	12
	Poliomyelitis	0	0	0
	Acute Flaccid Paralysis	49	49	0
	Shigellosis	172	90	82
	Amoebiasis	262	123	139
	Malaria	21	0	21
	Measles	12	6	6
	Acute Hepatitis A	110	95	15
	Enterohaemorrhagic *E.coli* Infection	0	0	0
	Hemorrhagic Fever with Renal Syndrome	1	1	0
	Hantavirus Pulmonary Syndrome	0	0	0
	Cholera	5	5	0
	Rubella	21	10	11
	Chikungunya Fever	13	0	13
	West Nile Fever	0	0	0
	Epidemic Typhus Fever	0	0	0

Category	Disease	Total	Indigenous	Imported
III	Pertussis	61	61	0
	Tetanus *	12	-	-
	Japanese Encephalitis	33	32	1
	Congenital Rubella Syndrome	0	0	0
	Acute Hepatitis B	172	162	10
	Acute Hepatitis C	41	41	0
	Acute Hepatitis D	1	1	0
	Acute Hepatitis E	7	5	2
	Acute Hepatitis Unspecified	13	13	0
	Mumps *	1,125	-	-
	Legionellosis	102	98	4
	Invasive Haemophilus Influenzae Type b Infection	12	12	0
	Neonatal Tetanus	0	0	0
	Enteroviruses Infection with Severe Complications	16	15	1
IV	Herpesvirus B Infection	0	0	0
	Leptospirosis	77	75	2
	Melioidosis	45	45	0
	Botulism	11	11	0
	Invasive Pneumococcal Disease	737	737	0
	Q Fever	89	85	4
	Endemic Typhus Fever	42	38	4
	Lyme Disease	0	0	0
	Tularemia	0	0	0
	Scrub Typhus	402	401	1
	Varicella *	9,218	-	-
	Cat-Scratch Disease	65	65	0
	Toxoplasmosis	5	5	0
	Severe Complicated Influenza Case	882	873	9
	NDM-1 Enterobacteriaceae	1	0	1

Category	Disease	Total	Indigenous	Imported
V	Rift Valley Fever	0	0	0
	Marburg Haemorrhagic Fever	0	0	0
	Yellow Fever	0	0	0
	Ebola Haemorrhagic Fever	0	0	0
	Lassa Fever	0	0	0

Notes:
1. Data were downloaded on May 1, 2011.
2. Data were analyzed by the onset dates.
3. * Calculations for tetanus, Mumps and Varicella were based on reported without specimens collection further epidemiological investigation wasn't performed for all cases where the infection was obtained.

Table 2 Number of Confirmed Cases of Chronic Notifiable Diseases, 2010

Category	Diseases	No. of Confirmed Cases
II	MDR-TB	156
III	Smear- positive Tuberculosis	5,027
	Other Tuberculosis	8,210
	Syphilis	6,482
	Gonorrhea	2,265
	HIV infection	1,796
	AIDS	1,087
	Hansen's Disease	5
IV	＃Creutzfeldt-Jakob Disease	0

Notes:
1. Data were downloaded on May 1, 2011.
2. The caseload of MDR-TB and that of smear-positive and others tuberculosis were calculated based on CDC's registration dates and notification dates respectively, whereas the other chronic infectious diseases were analyzed based on diagnosis dates.
3. ＃The first probable case of variant Creutzfeldt-Jakob disease (vCJD) in Taiwan who died in 2010 was adopted in 2010's CJD surveillance data and was categorized as an imported case due to resided in UK for 8 years (1989-1997) with exposedness across the prevalent period of bovine spongiform encephalopathy (BSE).

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