Study on
Okinawa's Development Experience
in Public Health and Medical Sector

December 2000

Institute for International Cooperation
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PREFACE

Recent years have seen a new emphasis on "people-oriented development" through aid in the social development field. Cooperation in the public health and medical sector is becoming increasingly important within this context because of its contributions to physical well-being, which is the basis from which all human activities proceed.

Nonetheless, infectious diseases that were long ago eradicated in developed countries are still rampant in developing countries, as are HIV/AIDS and other new diseases. Even those diseases that can be prevented or treated claim precious lives on a daily basis because of inappropriate education and medical care.

The government of developing countries, donors, NGOs, and other organizations continue to work to rectify this situation and improve the health care levels of people in developing countries. Japan, as one of the world's leading donor countries, is expected both to improve the quality of its own aid and to take a leadership role in this sector.

To help us in this effort, we referred to the history of health and medical care in postwar Okinawa Prefecture. Okinawa's experiences during postwar reconstruction contain many lessons that can be put to use in improving the quality of aid made available to developing countries.

In the times immediately following World War II, the people in Okinawa were constantly threatened with contagion and disease due to a lack of medical facilities and personnel, including doctors. Okinawa's subtropical climate combined with its insular geography meant that a long and strenuous effort had to be made in order to reach current levels of public health.

This report reviews the valuable experience and expertise gained by Okinawa as its government and people joined forces to overcome this situation. As was stated above, health and medical care are becoming more prominent components of aid, and this study, which systematizes Okinawa's local health care development experiences while examining the potential for international cooperation based on these experiences, is indeed both timely and welcome.

The study was chaired by Mr. Seisho Higa, Director of the Chuou Health Center in Okinawa who has many years of experience and deep insight into public health and medical care in the prefecture. The study committee included, as members and advisers, many doctors, nurses and local government officials who played important roles in improving public health levels in postwar Okinawa. On behalf of JICA, I would like to express my sincerest gratitude to the chairperson, study committee, advisers, and others involved for their earnest efforts in completing this study.

Finally, it is our sincere hope that this report will contribute to the improvement of public health and medical care in developing countries. We also hope that it will be an impetus for deeper relations between JICA and the people of Okinawa Prefecture as well as for the expansion of the circle of international cooperation.

December 2000

Keiichi Kato
Managing Director
IFIC, JICA

FOREWORD

Seisho Higa
Chairperson
Director,
Chuou Health Center, Okinawa Prefecture

1. Introduction

This report contains the findings of a study committee that worked for approximately one year beginning in early 1999 under a commission from the JICA.

The study committee had four primary objectives: (1) To systematize the experiences of Okinawa in local public health and medical care and to put them into a form that can be used as a development aid manual; (2) To conduct a detailed study of the international cooperation resources available in Okinawa Prefecture, discuss the potential for international cooperation by the government and people of Okinawa, and to provide recommendations in this regard; (3) To translate the resulting report into English for use in training programs; (4) To introduce a wide spectrum of the public in Okinawa and elsewhere about the prefecture's history on public health and medical care and the international contributions Okinawa has made to date.

Our study of international public health care cooperation by Okinawa rests upon several assumptions: 1) That cooperation will build upon the prefecture's experiences since the war; 2) That cooperation will focus on primary health care; 3) That programs will be suited to the facilities, equipment, and manpower currently available within the prefecture; 4) That attention will be given to the accumulation of international cooperation experiences within the prefecture; 5) That attention will be given to the involvement of younger generations in the prefecture; and 6) That the prefecture will be able to provide feedback, supervision, and advice even after training programs are completed.

The study committee evaluated and analyzed the approaches and expertise created and accumulated by Okinawa Prefecture in the field of public health care based on the assumptions that application to international cooperation had great potential. This was also based upon the idea that there are self-evident differences between the international cooperation conducted at the central level and the prefectural level, and that the prefecture should concentrate on the training of mid-level health care staff.

In the course of this study, we gained further confidence that the subtropical climate, insular geography, and postwar historical experiences of Okinawa are unique within Japan and it can provide valuable reference points for the difficulties encountered by developing countries. However, while experience and expertise can be accumulated, they tend to gradually disappear over time or to change their form and nature. The study committee was keenly aware of the need for constant efforts to transmit Okinawa's experiences and expertise from one generation to the next. It was indeed timely to

contextualize and reevaluate the health care organizations, technologies, and systems that developed out of the creativity and innovation of postwar Okinawa. This is useful in aid for developing countries, and is also an asset and a legacy for the people of Okinawa.

As we reviewed individual projects and entered the summarization process, the passion and enthusiasm exhibited by people working in the health care field, and the unity that was seen between governments and citizens emerged. There was more than just government policy behind the programs of the U.S. Military Government, the U.S. Civil Administration, and the Japanese government; the efforts of people played major role. We became aware of not only systems and programs, but of the individual medical professionals with the sense of duty and pride that they brought to their work—the physicians who sacrificed themselves to improve public health at a time when few medical professionals were available; the public health care nurses who accepted assignments on outlying islands and in remote villages, where they went door-to-door providing maternal and child health care and treating tuberculosis patients; the medical servicemen who protected the lives of people living on remote islands.

Thanks to their efforts and the combined efforts of local residents, the Ryukyu government, the Japanese government and the U.S. Civil Administration, Okinawa was successful in eliminating such endemic diseases as malaria and filaria, as well as hookworm and other parasites.

Reading between the lines of this report, you will see that the passion and effort of those involved were the keys to success for projects in development aid.

The study committee had time limitations, and it is uncertain whether we achieved all of our objectives, but we hope that people involved in international cooperation will find within this report directions that can be taken in primary health care activities in developing countries, and that this report will contribute in some way to the improvement of public health care in developing countries.

2. Structure of the report

Chapter 1 describes the status of health care in developing countries, the issues faced, and the efforts made by Japan. Many developing countries continue to suffer from inferior health care environments, and it is urgent that health care cooperation be provided. Indeed, this should be seen as a global problem.

Chapter 2 describes what is happening in Okinawa today. In addition to brief summaries of Okinawa's geographical and climate characteristics, economy, and health indices, this chapter also contains statistical information on the number of health care workers and descriptions of current health care institutions and government systems.

Chapter 3 describes the health care system that was painstakingly built by Okinawa Prefecture after the war. The chapter takes a topic-by-topic look at the history of health care in the prefecture and the activities of physicians, nurses, and health administrators as they fought to overcome disease with

extremely deficient medical resources. This chapter was written by people who are involved first hand in health care in Okinawa: prefectural government administrators, employees of major hospitals, public health center personnel, nurses, university professors, and NGO members.

Chapter 4 contains an outline of the health and medical institutions in Okinawa and a description of the international cooperation in which they have engaged thus far. This final chapter provides basic information for future studies of international cooperation by Okinawa.

The **Conclusion** considers the fields in which Okinawa's development experiences and health care delivery capacity can be used to provide health care cooperation. It also contains proposals from the study committee.

There are also boxes throughout the report that were written by people who were involved in public health and medical care activities during the period of postwar upheaval and by people who have participated in international cooperation in developing countries. They describe their experiences on the "front lines" of health care and how they solved problems using severely limited resources. We have also attached a "Health Nurse Activities Manual" as an **Appendix** to this report for your reference.

3. Organization for this study

The study committee was convened in January 1999 and met five times through July, after which it began the process of writing this report. During the meetings, committee members and advisors discussed experiences with health care in Okinawa and the potential for applying them in developing countries.

The study committee members determined guidelines for the implementation of the study and the writing of the report, and offered guidance and advice to the authors and taskforce. The advisors to the committee, Mr. Makoto Suzuki (Professor Emeritus, Faculty of Medicine, University of the Ryukyus) and Mr. Chokei Yoshida (Chairperson, Cambodia-Okinawa Friendship Association) provided valuable pieces of advice and insight at all phases of the project, from the initial research through to the completion of the report.

The study committee also requested people who were involved with or witnessed the history of health care improvement in Okinawa to write articles about the efforts that were made with the severely limited resources of the time. The task force gathered and analyzed materials and information, and drafted and edited the report under the guidelines and advice provided by study committee members and advisors.

4. Conclusion

The study committee enjoyed enormous cooperation from the collaborators, Faculty of Medicine, the University of the Ryukyus and many other institutions and organizations. It is unfortunately impossible to list everyone who helped in this endeavor, but the study committee would like to offer special thanks for the valuable cooperation and advice proffered by Associate Professor Hiroyuki Nozaki of the Okinawa-Asia Medical Research Center, Faculty of Medicine, University of the Ryukyus and Director Reiko Chihana of the Planning Section, Department of Welfare and Health, Okinawa Prefecture. We would have been unable to complete this report had it not been for their assistance.

Finally, the study committee would like to thank all of the members of the Research and Development Division, Institute for International Cooperation, JICA for their efforts in planning this project, the superb structure that they gave to it, and the excellent advice that they provided.

The study committee consulted the following works in the writing of this report. As information contained in these works is referred to throughout the report, individual citations have been omitted.

<Japanese>

1) Prevention Division, Department of Environment and Health (1995) *Choju no ashiato - Okinawaken choju no kenshokiroku [Signs of Longevity: Empirical Evidence of Longevity in Okinawa Prefecture]* Okinawa Prefecture.
2) Research Institute for Subtropics (1997) *Anettai chiiki no koshueisei -Chojyuchiiki Okinawa ni okeru 50 nenn no keiken [Public Health in Subtropical Regions: 50 Years of Experience in Long-Lived Okinawa]*.
3) Inafuku. M (ed.) (1979) *Okinawa no igaku (igaku hoken tokei-hen) [Medicine in Okinawa (Medical and Health Statistics Edition)]*. Kobundo

(as of March 2000)

MEMBERS OF THE STUDY COMMITTEE

<Chairperson>

Seisho Higa, M.D., M.P.H	Director Chuou Health Center, Okinawa Prefecture

<Committee Members>

Kaoru Ashimine, M. D.	Deputy Director Okinawa Chubu Hospital
Masako Kinjo	Deputy Director General Department of Health and Welfare, Okinawa Prefecture
Sachiko Nakazato	Professor Okinawa Prefectural College of Nursing
Seiichi Kinjo	Director, Programme Division Okinawa International Centre (OIC), JICA
Akira Hashizume	Director, First Medical Cooperation Division, Medical Cooperation Department, JICA
Katsuhiko Ozawa	Director, Research and Development Division Institute for International Cooperation, JICA

<Advisors>

Makoto Suzuki	Professor Emeritus, University of the Ryukyus Okinawa Research Center for Longevity Science
Chokei Yoshida, M.D, Ph.D., D.P.H	Chairperson Cambodia-Okinawa Friendship Association

<Contributing Authors>

Chieko Ohmine	Former President Okinawa Prefectural Nursing College

Takao Kishimoto	Director, Department of Biological Sciences Okinawa Prefectural Institute of Health and Environment
Ariaki Odo	Director Nanbu Health Center, Okinawa Prefecture
Tadashi Nakasone	Director Hokubu Health Center, Okinawa Prefecture
Hachiro Sakiyama	Director Koza Health Center, Okinawa Prefecture
Tamiko Fukuyama	Director Ishikawa Health Center, Okinawa Prefecture
Kiyoko Oshiro	Chief, Health and Welfare Section Chuou Health Center, Okinawa Prefecture
Munetaka Hirakawa	Chief, Living Environment Section Chuou Health Center, Okinawa Prefecture
Fumiko Higa	Chief, Health and Welfare Section, Ishikawa Health Center, Okinawa Prefecture
Yoshiko Shimoji	Manager, Health and Welfare Section Chuou Health Center, Okinawa Prefecture
Takao Okiyama	Manager, Food Section Chuou Health Center, Okinawa Prefecture
Masako Yamashiro	Executive, Health Enhancement Section Ishikawa Health Center, Okinawa Prefecture
Hisako Fukumori	Public Health Instructor, Public Health Promotion Division Department of Health and Welfare, Okinawa Prefecture

(as of March 2000)

MEMBERS OF THE TASK FORCE

Yojiro Ishii, D.V.M <Chief of the Task Force>	Senior Advisor Institute for International Cooperation, JICA
Junko Kurashimo (until March, 1999)	Junior Specialist, Research and Development Division, Institute for International Cooperation, JICA
Nobuaki Koguchi (since March, 1999)	Staff, Research and Development Division, Institute for International Cooperation, JICA
Hajime Nakaza	Chief, Research Division Okinawa Research and Planning Institute Corporation (Consultant)

<Secretariat>

Research and Development Division, Institute for International Cooperation, JICA served as the secretariat. JICA Okinawa International Centre (OIC) cooperated in holding the Study Committee meetings.

History of Public Health Care in Post-War Okinawa (up to reversion)

Year	Main Events	History of Public Health Services	Development of Public Health Care System
1944	10 Naha destroyed by large-scale air raid (Oct. 10).		
1945	4 Nimitz Proclamation: Okinawa brought under direct rule by the U.S. military (navy) 6 End of Battle of Okinawa (June 23) 8 Japan accepts Potsdam Declaration (Aug. 15). 8 Okinawa Advisory Council established (August 24) (public organization run by citizens)	• Assistant doctor system started (predecessor of nursing system; Proclamation No. 9) (3-2) • Major outbreak of "war malaria" in Yaeyama (until 1947-8) (3-6-6)	• Establishment of Public Health and Welfare Section in GHQ • Establishment of Public Sanitation Section, Medicine Administration Section in military government • Establishment of Public Health Division in Okinawa Advisory Council
1946	4 Establishment of Okinawa Civil Government (governor appointive; limited autonomy). Okinawan Diet established. 6 Free distribution of materials by U.S. army terminated. 1 U.S. military (army) assumes administrative responsibility. 8 Evacuees start returning from mainland Japan. Aid through Garioa Fund commences.	• Government-administered medical care commenced (April). (3-1) • Transfer of control of medical institutions to civil government public sanitation department following establishment of civil government • Dysentery outbreak (1946-7) (3-6-1)	• Public health districts established. • Public Health Department set up in civil government (Medicine Administration Section becomes the Medicine Section) • Psychiatric ward set up at Ginoza Hospital. • Nurse training started at nursing schools attached to Okinawa Central Hospital and two other hospitals.
1947	3 Civil governments established in Yaeyama and Amami Islands. Rara Material Aid Program (until 1953)	• Outbreak of Japanese encephalitis (196 cases) (3-6-2) • Malaria eradication measures implemented (Yaeyama government); anti-malaria campaign commenced in Miyako Islands (3-6-6)	• Hygienic laboratory established at Okinawa Central Hospital.
1948		• U.S. overseas study program established (until 1971; 1,054 students)	
1949	3 First departure of emigrants to Bolivia 4 Commencement of aid through Eloa Fund (financial assistance for rehabilitation) 12 Inspection tour of Okinawa by Brigadier-General Sams, Director of GHQ Public Sanitation Bureau	• Mainland Japan overseas study program (contract students commenced (until 1986; 3,116 students) (3-1) • Dispatch of public health inspectors from mainland Japan	• Foundation of Ryukyu Civil Government Psychiatric Hospital.
1950	4 Ryukyu Rehabilitation Fund established. 6 Outbreak of Korean War (ended in 1955) 9 Establishment of archipelago governments (Okinawa, Yaeyama, Miyako, Amami) (by public election) Growth of autonomous government movement in opposition to pressure from military government 9 U.S. Civil Administration of the Ryukyus (USCAR) established (civil governor system). Military government dissolved.	• Construction of model hospitals (Okinawa Central Hospital, Nago Hospital) • 1st public health nurse training program (3-3)	• Public Health Department set up in civil government. • University of the Ryukyus opened.
1951	4 Establishment of Ryukyus Central Government (archipelago government remaining in name only) 5 Japan approved as member of WHO. 9 San Francisco Peace Treaty signed (region south of 29th Parallel under U.S. control). Rapid construction of military bases	• Public Health Nurse Training Institution Law enacted. • Public Health Center Law promulgated - commencement of public health nurse program and resident local public nurse system (Proclamation Nos. 35 and 36) (3-3) • Public health service standards drawn up. (3-3) • Medical serviceman and dental service man system commenced (Proclamations Nos. 42 and 43) (3-2) • Measures taken against infectious diseases (Proclamation No. 46) (3-6)	• Establishment of Public Sanitation Section in the Health and Welfare Bureau • Public health centers opened (in Nanbu, Goza, Hokubu, Yaeyama) • Okinawa Association for Support of the Leprosy founded. • Start of water supply using simple water supply system (in Naha). • Midwives Association established in Okinawa Islands Public Nursing Association
1952	3 Election of members of legislative council (first direct election). 4 United States-Japan Security Treaty takes effect (April 28). 7 Shift to indirect administration through establishment of Government of the Ryukyus (until reversion; legislature, executive and judicature separate, but administrative heads appointed). Archipelago governments dissolved.	• Doctors permitted to start their own practices (Proclamation No. 37) (3-1) • Survey conducted for prevention of filaria (until 1964) (3-6-7) • Public Health Center Law enacted. (3-3-4) • Commencement of prenatal and nursing mother health counseling (3-4) • Food Sanitation Law takes effect. (3-8)	• Ryukyu Public Health Research Institute opened. • Public health centers set up (Miyako, Amami).

Year	Main Events	History of Public Health Services	Development of Public Health Care System
1953	1 Ryukyu Citizens Repatriation Rally 11 Vice-President Nixon visits Okinawa. 12 Amami Islands returned to Japan. School meals provided through RIBAKKU supplies	• Ryukyu government-funded student program started following abolition of contract overseas student system (name changed to Japanese-government funded student program in 1955). (3-1) • Major outbreak of "migrant malaria" (until 1957) (3-6-6) • Major outbreak of Japanese encephalitis (213 cases) (3-6-2) • Infant Health and Welfare Law (3-4) • "A-sign" system started. (3-6-9, 3-8)	• Public Health Section, Health and Wealth Bureau becomes Public Health Division, Social Welfare Bureau
1954	1 President Eisenhower declares "We shall maintain indefinitely our bases in Okinawa." 2 Regular flights between Okinawa and mainland Japan started.	• Tuberculosis home treatment system started (provisional anti-tuberculosis guidelines) (3-6-3) • Provision of rice and water supply facilities (3-6-10)	
1955			
1956	12 Japan joins the United Nations.	• Establishment of public health nurse schools (Proclamation No. 162) (3-3) • Tuberculosis Prevention Law enacted. (3-6-3)	
1957	Meeting between Japanese Prime Minister Kishi and President Eisenhower 7 US civil government changes to high commissioner system (until reversion).	• Wheeler Plan commenced. (3-6-6) • Outbreak of polio (3-6-2) • Outbreak of influenza (3-6-2)	
1958		• Transfer of administration of A-sign public health surveys to the Ryukyu government (3-6-9, 3-8)	• Okinawa Leprosy Prevention Association founded. • Ryukyu Association for Support of the Mentally Disabled founded. (now the Mental Health Association) • Ryukyu Water Supply Company established.
1959		• Home treatment for lepers started (Yaeyama system) (3-6-4)	• Naha Open Hospital opened. • Naha School of Nursing established.
1960	2 Head of Japan Medical Association visits Okinawa. President Eisenhower visits Okinawa. Treaty of Mutual Cooperation and Security between the United States and Japan takes effect.	• Polio designated as infectious disease. (3-6-2) • Mental Health Law enacted. (3-9-2)	
1961		• Indigenous malaria eradicated. (3-6-6) • Home treatment system started through enactment of Hansen's Disease Prevention Law. • Outbreak of cholera (until 1962) • Filaria survey started. (3-6-7)	• Ryukyu Parasite Study Center (private opened.
1962	President Kennedy's new policy: "I recognize the Ryukyus to be part of the Japanese homeland."	• Start of extra-prefectural treatment program for tuberculosis patients (3-6-3) • Venereal Disease Prevention Law enacted. (3-6-10) • Nutritionist Law and School Public Health Law promulgated. (3-3)	
1963	6 Exceptionally serious drought occurs in Okinawa. 11 Dispatch to Vietnam of U.S. soldiers stationed in Okinawa begins.	• Outbreak of Japanese encephalitis (120 cases) (3-6-2)	• Okinawa Parasite Prevention Association founded.
1964	10 Olympic Games held in Tokyo.	• Ryukyu Government Vaccination Law enacted. (3-6-2) • "Zero parasites" campaign started (until 1969). (3-6-5)	• Ryukyu Government School of Midwifery opened.
1965	1 First conference between Japanese Prime Minister Sato and President Johnson 8 Prime Minister Sato visits Okinawa. Vietnam War intensifies.	• Filaria eradication program started. (3-6-7)	• Comprehensive public assistant nurse education started at Naha College of Nursing (In 1991 Naha and Koza nursing colleges closed and Okinawa Prefectural College of Nursing opened. Okinawa Prefectural College of Nursing opened in 2000.)
1966		• Start of diagnostic survey of 3-year-old infants (3-4)	• Public health nursing course introduced at Naha Prefectural High School.
1967	Second conference between Japanese Prime Minister Sato and President Johnson	• Start of postgraduate clinical training program in cooperation with the University of Hawaii (Chubu Hospital) (4-1-2)	

Year	Main Events	History of Public Health Services	Development of Public Health Care System
1968	Calls for withdrawal of U.S. bases following successive incidents, accidents	• Hansen's Disease Prevention Law promulgated. (3-6-4) • Public Assistant Nurse Law enacted. (3-3)	• Okinawa Water Supply and Sewerage Public Company established.
1969	11 Sato-Johnson Joint Declaration (reversion of Okinawa to Japan in 1972)	• Maternal and Child Health Law promulgated. (3-4) • Confirmation of large number of infants born with congenital rubella syndrome	• University of the Ryukyus Faculty of Health established. (Faculty of Medicine set up in 1979)
1970	10 Okinawa reversion negotiations start. 11 First election of Okinawan representatives in the Diet (both houses)	• Extensive spread of leptospirosis discovered on Izena Island (as a result of countermeasures no cases confirmed after 1978) (3-6-8)	• Okinawa Prefectural Institute of Public Health established (through reorganization of Ryukyu Instituted Public Health)
1971	6 Okinawa Reversion Treaty signed.	• "Treatment Guidelines" drawn up. (3-3)	
1972	4 U.S. army resumes bombing of North Vietnam. 5 Dissolution of US civil government, Government of the Ryukyus (May 12) Reversion to Japan; establishment of Okinawa Prefectural Government 9 Resumption of diplomatic relations between Japan and China	• Emergency patient helicopter transportation service commences. (3-5) • "Public nurses" all become "public health nurses"	• Okinawa Health Service Association established.
1973	(Dispute over environment pollution accident caused by U.S. military)	• No cases of Japanese encephalitis confirmed. (3-6-2) • Remote Island Electrocardiogram Transmission Project started. (3-5)	
1974			• Prefectural Health and Welfare Department divided into Social Welfare Department and Environmental Health Department.

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APPENDIX: THE PUBLIC HEALTH NURSE MANUAL

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1. Japan's Response to Health and Medical Care Challenges in Developing Countries

1-1 Current Status of Health and Medical Care in Developing Countries

1-1-1 Disparity in Health between Developed and Developing Countries

Increase in the Disparity in Health

Thanks to the unprecedented scientific and technological progress and socio-economic development in the second half of the twentieth century, the health of humankind as a whole has improved greatly. The world's average life expectancy rose from the age of 48 in 1955 to 64 in 1997, while the mortality rate (per 1,000 births) of infants under five years old decreased from 210 in 1955 to 87 in 1997. This overall improvement in health has resulted from advances in medical technology such as the development of antibiotics and other drugs and the improvement of medical facilities on the one hand, and the development of the social environment through factors such as improved nutrition, water supply, and sewerage facilities on the other.

However, the disparity between health in developed and developing countries has continuously increased during this period. While advanced medicine has resulted in a remarkable improvement in health in developed countries, health and medical services in developing countries have deteriorated due to social and economic disorder and delays in development. Furthermore, through the spread of new infectional diseases and/or the reappearance of old ones, as well as the deterioration of the environment accompanying rapid population increases and urbanization, these health problems have become extremely serious.

Table 1-1 Comparison of Health Indicators in Developed Countries, Developing Countries, and Least Developed Countries

Area / Indicator	Average life expectancy (1997)	Under 5 infant mortality rate per 1,000 births (1997)	Maternal mortality rate per 10,000 births (1990)
Developed countries	78	7	30
All developing countries	63	96	488
Least developed countries	51	168	1100
All countries	64	87	430

Sources: UNDP "Human Development Report 1998", UNICEF "The State of the World's Children 1999"

Disease in Developing Countries

A comparison of the causes of death in developed and developing countries shows that while the chief cause of death in developed countries is disease of the circulatory organs, followed by cancer and

disease of the respiratory organs, the chief causes of death in developing countries are infectious disease and parasitic infection, followed by disease of the circulatory organs, perinatal women's diseases, and cancer. In developed countries, thanks to environmental hygiene, prevention, and the progress of medical science, only 1% of deaths are caused by infectious disease or parasitic infection. But in developing countries, due not only to the poor living environment but also to malnutrition, inadequate health care services, and insufficient health education, infectious disease and parasites are the cause of almost half of all deaths. Moreover, the number of deaths of women resulting from perinatal disorders or complications in pregnancy is ten times higher in developing countries than in developed countries.

Table 1-2 Comparison of Causes of Death in Developed Countries and Developing Countries

Cause of death / Area	Infectious disease/ parasitic infection	Disease of circulatory organs	Perinatal disorder	Complications in pregnancy	Cancer	Disease of respiratory organs	Others
Developed countries	1%	46%	1%		21%	8%	23%
Developing countries	43%	24%	10%		9%	5%	9%
All countries	33%	29%	7%	1%	12%	6%	12%

Source: WHO "The World Health Report 1998"

1-1-2 Major Infectious Diseases in Developing Countries (Tuberculosis, HIV/AIDS, Malaria)

This section deals with the infectious diseases and parasitic infection that are the most common causes of death in developing countries: tuberculosis, HIV/AIDS, and malaria.

Tuberculosis

Since tuberculosis is an infectious disease that becomes much more chronic and serious where the living environment is poor, hygiene is inadequate and medical services are insufficient, it occurs frequently among the lowest income groups. Although the number of cases of tuberculosis dropped rapidly from the 1940s to the 1950s thanks to the development of antibiotics, it has started to rise again through the emergence of multi-drug resistant virus and the opportunistic infection of AIDS patients. At present, 7.3 million people throughout the world become infected with tuberculosis every year, of whom about 3 million die (10% infants). It is reported that 99% of deaths from tuberculosis occur in developing countries, accounting for more than one quarter of preventable deaths of adults in these countries.

HIV/AIDS

HIV/AIDS, which has rapidly spread throughout the world since its existence was first confirmed at the beginning of the 1980s, is the best-known example of what are now referred to as emerging infectious diseases. Although the number of new HIV/AIDS cases appears to be on the decrease in

developed countries due to the diffusion of preventive education, it is continuing to increase substantially in developing countries. By 1997, 30.6 million people throughout the world were infected with HIV/AIDS, more than 90% of whom were in developing regions - 20.8 million (68.0%) in Sub-Saharan Africa, 6 million (19.6%) in South and Southeast Asia, and 1.3 million (4.2%) in Latin America. The annual number of deaths from AIDS was 2.3 million, of which 1.8 million (78.3%) were in Sub-Saharan Africa and 250,000 (10.9%) were in South and Southeast Asia. The total number of deaths from AIDS of children under 15 was 460,000, of which 430,000 were in Sub-Saharan Africa, while the total of children of 14 or under who had lost parents through AIDS was 8.2 million, of whom 7.8 million (95.1%) were in Sub-Saharan Africa. HIV/AIDS not only has a grave impact on the national economy because it attacks the most productive adult groups but also poses a serious threat to the next generation through the infection of children in the womb and the creation of AIDS orphans. It is therefore expected to become a major obstacle to development, particularly in African countries.

Malaria

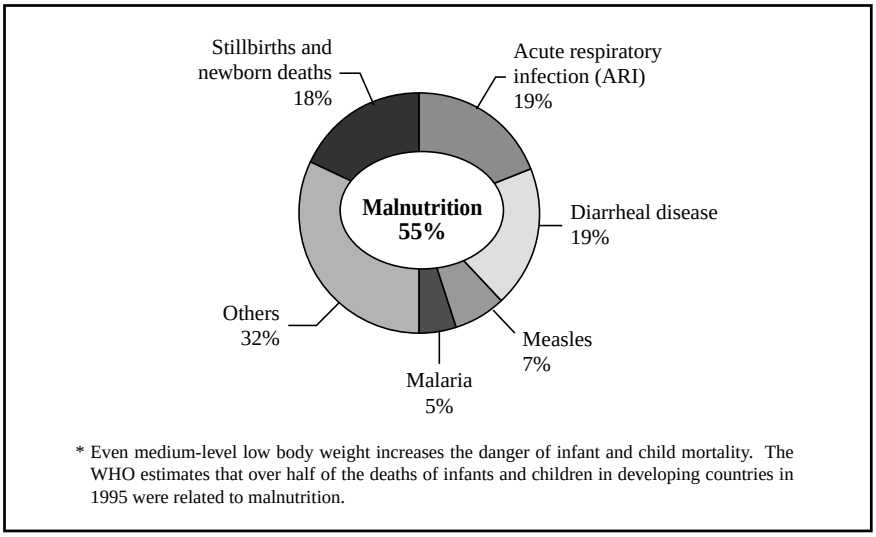
Like tuberculosis, malaria is a reemerging infectious disease which was successfully controlled for a period but is now spreading again due to its increased resistance to anti-malarial drugs. Every year 300 to 500 million people throughout the world, mainly in tropical regions, contract malaria, of whom 1.5 to 2.7 million die. Of these, about 1 million are infants under five, making malaria the chief cause of death of infants in developing countries. Since many of the adults infected with malaria are laborers who migrate seasonally or take up work in newly developed areas, the disease considerably reduces the labor force even if it does not lead to death. It is also a cause of prenatal or perinatal deaths among women. It is estimated that the total economic losses caused by malaria in Africa amount to as much as 2.2 billion dollars per year.

1-1-3 Children's Health in Developing Countries

Causes of Infant Deaths in Developing Countries

In developing countries as mentioned in 1-1-1 above, and in developing countries, particularly the least developed countries, the infant mortality rate is more than ten times higher than in advanced countries. The main causes of infant death are acute respiratory infection, diarrheal disease, and disorders at birth, each of which accounts for about 20% of deaths, followed by non-infectious diseases (10%), measles, injury, and malaria (Figure 1-1). Most of these can be prevented by vaccination or simple medical treatment, environmental hygiene, appropriate care at birth, etc.

Figure 1-1 Causes of Infant/Child Mortality (1995)



* Even medium-level low body weight increases the danger of infant and child mortality. The WHO estimates that over half of the deaths of infants and children in developing countries in 1995 were related to malnutrition.

Source: UNICEF "The State of the World's Children 1999"

Infant Malnutrition in Developing Countries

In developing countries, one in five newly born babies have a low body weight of less than 2.5 kilograms. It is estimated that more than half the deaths of infants in developing countries are related in one way or another to malnutrition. Malnutrition and under-nutrition are caused not only by an inadequate intake of food but also by factors such as diseases of the digestive system due to unhygienic water and insufficient nutritional education. An examination of the regional distribution of infant malnutrition shows that half of these cases are concentrated in the South Asian countries of India, Bangladesh, and Pakistan, where malnutrition of female infants is particularly serious. Another serious problem in developing countries is the insufficient intake of micronutrients such as vitamin A, iodine, and iron. For instance, about 30 million infants throughout the world, particularly in landlocked countries, are in danger of suffering retarded physical and mental development due to iodine deficiency.

Inadequate Perinatal Management and Infant Mortality

The high incidence of miscarriages, stillbirths, and deaths of newborn babies is directly caused by insufficient education and management of expectant and nursing mothers and the lack of medical treatment for preventing infection or complications during delivery. Underlying this problem are short intervals between pregnancies and pregnancies of mothers who are too young or too old, which result from the failure to provide sufficient knowledge or means of family planning.

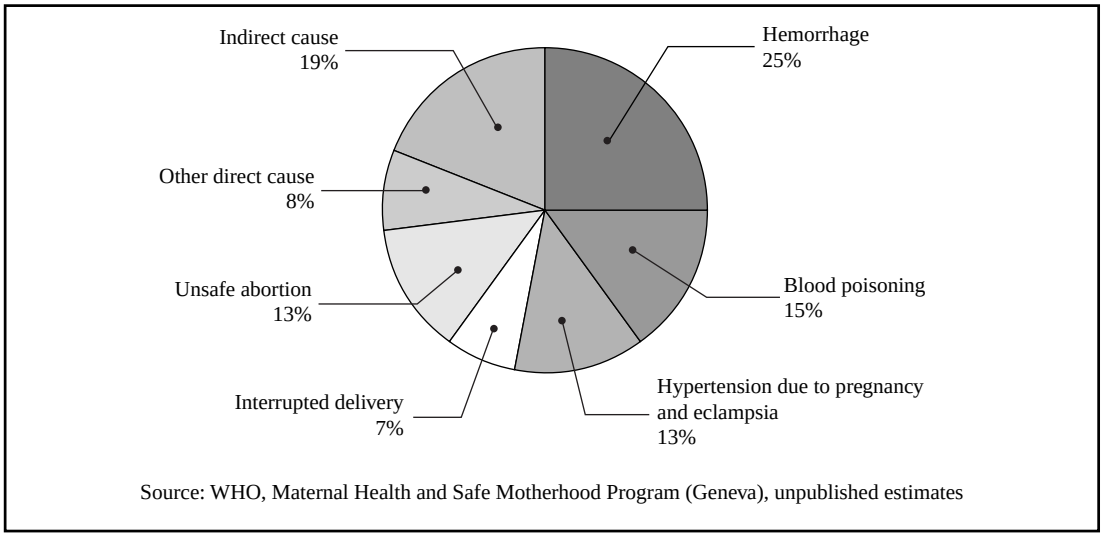
1-1-4 Women's Health/Reproductive Health

Maternal Mortality in Developing Countries

Annual deaths of pregnant women and nursing mothers throughout the world amount to 585,000

women, most of which occur in developing countries in Asia and Africa. The main causes of death are hemorrhage, blood poisoning, eclampsia, and obliterative delivery, which in turn result from difficult pregnancies due to early age or an extremely short interval between births, malnutrition, excessive labor by the mother, inadequate or inappropriate maternity treatment, inappropriate abortion, and inadequate or unsuitable medical treatment during childbirth. Even when these problems do not directly lead to death, a total of 15 million women every year suffer from after-effects such as injury or infectious disease as a result of not receiving adequate care during pregnancy or during childbirth.

Figure 1-2 Causes of Death of Pregnant Women and Nursing Mothers (1990)



Source: UNFPA "The State of World Population 1997"

Low Family Planning Diffusion Rate and Discrimination against Women

Women in developing countries do not have sufficient access to knowledge or methods of contraception and family planning that they can undertake on their own initiative with respect to pregnancy and childbirth. At the International Conference on Population and Development (ICPD) held in Cairo in 1994, it was estimated that about 350 million couples throughout the world do not use modern family planning methods and that, among married women who do not want to become pregnant, about 150 million do not use any form of contraception. It cannot be overlooked that it is difficult for women to chose whether to become pregnant and give birth not only because of inadequate medical services or poverty but also because of inappropriate social awareness regarding sex and reproduction and the existence of discrimination against women in society and in the home.

1-1-5 The Population Problem and Public Health and Welfare

The Rising World Population and Deteriorating Social Environment

In 1999, the world's population exceeded the 6 billion mark. The increase of the world population

was particularly rapid in the twentieth century: after first reaching 1 billion in 1804, it rose to 2 billion in 1927, 3 billion in 1960, 4 billion in 1974 and 5 billion in 1987. Reflecting the gradual fulfillment of the requirements for reproductive health including family planning, the population growth rate has started to slow since the beginning of the 1990s. However, since the generations born in the 1970s and 1980s are now entering their child-bearing years, it is estimated that the world's population will continue to increase at a rate of at least 80 million people per year. This high population growth rate is mainly concentrated in developing regions. In these regions, which account for about 80% of the world's population, the growth rate is 1.8% compared with only 0.4% elsewhere. Since the development of social infrastructure is not keeping pace with this population growth in developing countries, it is feared that the poor living environment will become even worse, that securing food and employment will become more difficult, and that public health and welfare services will deteriorate.

A New Challenge: The Aging Society

On the other hand, the decline of the birth rate and reduction of the death rate through advances in medical technology have increased the average age of the population, and this aging will occur in all countries in the first half of the 21st century. The aging society will give rise to new welfare needs, such as nursing services for the aged and the treatment of adult diseases and chronic diseases. The burden on health care administration is also expected to steadily increase. This is becoming a serious problem not only for advanced countries but for developing countries too. Particularly in countries like China which have promoted a lower birth rate as a policy measure, a rapid increase in the average age is occurring, making it necessary to support an aged population that is larger than the working population. As a result, in addition to developing and improving the public medical and welfare system for the aged, the establishment of a system whereby the working population can support the aged has become an urgent task.

1-1-6 Health and Medical Care Policies in Developing Countries

Structural Adjustment and the Public Health Sector

Since the 1980s, most developing countries have been implementing market economy-oriented privatization and decentralization projects based on structural adjustment guidance from the World Bank and the IMF. However, amid the rapid emergence of a global market economy, developing countries burdened by fragile socio-economic infrastructures have been left behind and their economies have fallen into serious stagnation. The disparity between developed and developing countries has consequently increased, and the gap between rich and poor in developing countries has grown even wider.

Among the various national projects in developing countries, structural adjustment has particularly required a considerable reduction and rationalization of the budget for the social welfare sector. In the health and medical care field too, in line with structural adjustment guidance, developing countries have implemented budget reductions and rationalization by making large cuts in subsidized projects and administrative services, and by promoting the payment of fees for medical care. This has been implemented with the aim of improving the quality of medical services and making projects more efficient by reallocating national health budgets, which tended to place priority on advanced medical care such as chubu hospital facilities and cancer treatment, to more cost-effective regional disease prevention projects. Such reallocation has also involved the elimination of unreasonably expensive or unnecessary medical supplies, securing sufficient essential medicines at low cost, cutting surplus staff, and increasing incentives to medical practitioners. In fact, however, these measures have resulted in lowering the quality and quantity of adminstrative services by reducing the number of personnel and making medical care unavailable to the poor, who cannot afford the fees.

Policy Ideals and Reality in the Health and Medical Care Sector

The budget allocated for the health and medical care sector currently accounts for about 5-7% of the national budget in developing countries, a considerably lower proportion than the average of about 10% in developed countries. In view of this situation, most developing countries place priority on improving regional public health based on a primary health care approach, but an examination of their budget allocation shows that emphasis continues to be placed on large central hospitals and research organizations.

Health and medical care organizations in developing countries are also not functioning adequately. Although such organizations have been establishing and improving the health centers and health posts that serve as bases for regional health and medical care, they are beset with problems such as the difficulty of posting medical staff in local areas, the shortage and low quality of human resources, insufficient budgets for projects, and inadequate medical facilities and equipment.

Table 1-3 Comparison of Medical Care Staff in Developed Countries, Developing Countries, and Least Developed Countries

Staff category / Area	Doctors (per 100,000 people)	Nurses (per 100,000 people)
Developing countries	287	780
All developing countries	76	85
Least developed countries	14	26
All countries	122	141

Source: UNDP “Human Development Report 1998”

1-2 Development Assistance Challenges in the Health and Medical Care Sector

1-2-1 Changes in Development Challenges

The Postwar Rush to Independence and Breakdown of Socio-Economic Development

After the Second World War, particularly in the 1950s and 1960s, many colonies in Asia and Africa gained their independence and embarked upon state-led economic development based on import substitution-based industrialization. But these development plans, which were dependent on huge capital loans from overseas and the export of agricultural products, did not proceed smoothly. During the 1970s and 1980s, under the influence of rapid technological development of the developed countries and the two oil crises, industrialization broke down in many developing countries, resulting in massive debts, the impoverishment of agriculture, economic stagnation, and increased social insecurity.

Genesis of the Primary Health Care Concept

Against this background, in the health and medical care sector too, the 1950s and 1960s saw the implementation of large-scale state-led malaria eradication projects and the establishment of high-level medical facilities that actively introduced advanced medical technologies from advanced countries. From the beginning of the 1970s, however, many of the newly-independent countries fell into economic recession and, unable to provide sufficient health and medical care services extending to the lowest levels, changed their approach by abolishing unsustainable top-down services. Following the highly-praised activities of the "barefoot doctors" in China during the Cultural Revolution of the mid-1960s and of the grassroots workers in regional health projects conducted by the WHO and UNICEF, the concept of primary health care (PHC) was approved by the government representatives of each country at the WHO/UNICEF world conference held at Alma-Ata in 1978. From the 1980s, however, the ideal of social equity that underlay PHC failed to gain recognition with the consolidation of centralized governments in developing countries and the competition over assistance between the power blocs of the East and West. As a result, PHC was not developed to the stage where it could function effectively in many developing countries.

Introduction of the Structural Adjustment Program and Deterioration of the Health Care Environment

At the end of 1970s, the World Bank and the IMF launched the Structural Adjustment Program (SAP) to support economic reforms in developing countries struggling under the burden of foreign debts, providing large loans on condition that these countries shifted to a market economy and improved the efficiency of public projects. Aimed at the recovery of national economies, SAP resulted in the considerable reduction and rationalization of nonproductive projects and public welfare projects. In the health and medical care sector, fee payment systems were introduced and large cuts were made in

public health services, creating a more severe health and medical care environment, particularly for the poor.

Increasing Awareness of the Need for Human-Centered Development

The period from the end of the 1980s to the beginning of the 1990s saw the collapse of the Cold War structure. As many former Communist countries embarked upon democratization, a broader awareness arose that the ultimate objective of development assistance should be the realization of individual happiness. At the World Summit for Social Development held in Copenhagen in 1995, the participating countries approved the aim of "human-centered sustainable development" which accorded closely with the PHC ideal. At the International Population and Development Conference held one year earlier in 1994, the participants endorsed the principle of "reproductive health and rights" that guarantee people's health and human rights with respect to sex and reproduction.

A New Development Strategy for the 21st Century

In 1996, a new strategy for development assistance in the 21st century titled "Shaping the 21st Century: The Contribution of Development Cooperation" was adopted at an upper-level meeting of the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD). With the ultimate objective of sustainable development for the improvement of the quality of all people's lives, this new development strategy placed emphasis on the independent efforts (ownership) of developing countries and partnership through coordination among aid donors in promoting the reduction of poverty, dissemination of education and health care, and sustainabilty and recovery of the environment. In the health care sector, the targets for 2015 were to reduce the infant/child mortality rate and perinatal women's mortality rate to one third and one quarter of their present levels, respectively, and, through the PHC approach, to provide reproductive health services to all those in need of them.

1-2-2 The Concept of Primary Health Care (PHC) and its Development

The PHC Ideal, Constituent Elements, and Background

At the WHO/UNICEF International Health Conference held at Alma-Ata in the former Soviet Union in 1978, PHC was defined as follows: "PHC is basic health care that is feasible in the region concerned, is scientifically correct, employs socially acceptable methodology, can be used by all the people living in the region, and is based on technologies that can be maintained in the region, operating through participation in an independent and self-determinatory spirit and in accordance with each stage of development."

PHC consists of eight elements: health education, nutrition, safe water and hygiene, maternal and child health and family planning, vaccination, endemic disease countermeasures, primary medical care,

and the securing of essential medical supplies. It has been proposed that oral hygiene and psychological health be added to this list.

As mentioned above, PHC was first advocated in the days when it was becoming clear that the top-down regional medical care systems failed to function, leading to the deterioration of the health situation in developing countries. After the PHC declaration, WHO proposed that all those involved should strive to ensure that all people could live sound physical and social lives within an society with the objective of achieving "Health for All by the Year 2000."

However, in the socio-economic conditions of the time, the PHC ideal failed to function adequately in practice. A growing emphasis on investment-effectiveness gave rise to the trend of optional implementation of efficient and practicable PHC, such as vaccination and oral rehydration therapy (ORT). This aroused opposition from groups who insisted that the original aim of PHC was to encourage participatory and comprehensive health care activities at a local level and that activities that simply depended on investment from overseas would undermine the independence of local residents.

1-2-3 Reproductive Health and Rights (Health and Human Rights regarding Sex and Reproduction)

The Principle and Four Objectives of Reproductive Health and Rights

The principle of reproductive health and rights was agreed at the International Conference on Population and Development (ICPD) held in Cairo in 1994. According to this principle, reproductive health was defined as "the perfectly sound condition of the human reproductive system with respect to all aspects of its functions and processes, not only for the prevention of illness or injury but from the physical, psychological and social standpoints." Accordingly, it was asserted that all human beings have "the right to enjoy freedom of choice regarding their sex lives, birth, and family planning." Conventionally, health and social issues related to sex and reproduction had been treated as medical issues restricted to maternal and child health during the perinatal period, and family planning had tended to be viewed from the collective perspective of population measures. The new principle reflected a shift of focus to a more comprehensive view of health relating to sex and reproduction throughout the life of each individual and the social right of the protection of this health. The ICPD called for the enhancement of women's capacity and social status (empowerment) through the protection of their rights relating to reproductive health. This principle was reconfirmed at the 4th World Conference on Women held in Beijing in 1995, the year after the Cairo conference. At the Beijing conference, the participating countries adopted the expansion of reproductive health and rights as a national aim and, regarding its implementation, reconfirmed the importance of the roles of NGOs taking direct approaches to civil society.

The ultimate objective of reproductive health and rights is to achieve the following four aims with regard to individuals and couples.

(1) To ensure sound sexual maturity and guarantee the establishment of fair and responsible sexual relations between men and women.
(2) To enable people to parent the number of children they want safely and healthily.
(3) To eliminate disease and injury arising from sex and reproduction and provide the appropriate care when necessary.
(4) To free people from violence or dangerous customs regarding sex and reproduction.

In order to achieve these aims, WHO, UNICEF and the United Nations Population Fund (UNFPA), in coordination with the governments of each country, donor organizations and NGOs, are advancing legal and social measures for the promotion of maternal and child health, the diffusion of family planning education services, sexual disease countermeasures, and the protection of women's rights regarding sex and reproduction.

The Safe Motherhood Initiative

The Safe Motherhood Initiative is a comprehensive strategy for the improvement of women's health drawn up mainly by related organizations in 1987. At present, a new plan for women's lives and health, focusing in particular on pregnancy and birth, is being formulated along the following lines.

(1) Adequate pregnancy management and guidance for pregnant women by health workers,
(2) Childbirth assisted by specialists who have received sufficient training and establishment of a referral system for dealing with disorders at delivery,
(3) Post-natal child and maternal care and guidance on breast-feeding, family planning, etc. by health workers,
(4) Provision of adequate family planning information and methods to all couples and individuals including juveniles and unmarried women,
(5) Appropriate response to complications arising from unsafe abortion and provision of safe abortion methods and psychological care,
(6) Provision of sound education concerning sex and reproduction, including gender issues, and
(7) Improvement of the education of husbands, local leaders, and administrators regarding women's health and the enhancement of their social status.

1-2-4 Children's Health Policies

Vaccination Programs

After the Second World War, with the development of effective vaccines against various diseases, the use of vaccination extended throughout the world. A total of 313 million dollars was poured into the campaign to eradicate smallpox launched in 1967 under WHO leadership, and in 1980 it was announced that the disease had been completely eradicated. At the 1974 World Health Assembly, the

Expanded Program on Immunization (EPI) was adopted with the aim of immunizing all children against the six vaccine preventable diseases: polio, diphtheria, whooping cough, tetanus, tuberculosis, and measles. By the end of the 1980s, about 80% of children throughout the world had received these vaccinations. In 1990, the Children's Vaccine Initiatives were adopted, resulting in the further expansion of immunization and development of new vaccines throughout the world. At the 1988 annual meeting of the World Health Assembly, the Global Polio Eradication initiative was adopted with the aim of completely eradicating polio, one of the diseases targeted by the EPI, by the year 2000. In 1991, the eradication of polio was confirmed in North and South America and it is expected that its eradication will be announced in the WHO Western Pacific Region in 2000. However, in Southwest Asia, the Middle East, and Africa, due to the lack of vaccines, systems of refrigerated transportation, and resources to pay personnel, as well as public safety issues, there are many countries where eradication targets have not yet been achieved.

The World Summit for Children

In 1990, the World Summit for Children adopted the World Declaration on the Survival, Protection and Development of Children, which set seven main targets, including the reduction of the mortality rate of children under 5 to one-third of its current level, the reduction of high and medium-level malnutrition by 50%, and the securing of safe water. The Declaration also proposed a concrete plan of action for the promotion of children's rights, improvement of children's health, expansion of pre-natal care, improvement of water supply and environmental sanitation, measures against malnutrition and famine, improvement of the status of women, strengthening of aid for the family unit, promotion of literacy, vocational training, measures against illegal child labor, and measures against drug addiction.

Integrated Management of Childhood Illness (IMCI)

In 1992, the Integrated Management of Childhood Illness (IMCI) was jointly proposed by WHO and UNICEF as a new strategy for children's health measures. The aim of IMCI was to reduce the infant and child morbidity and mortality rates by improving primary-level health and medical care facilities. In 1996, basic common global guidelines were drawn up for the more efficient and effective reduction of the infant and child morbidity and mortality rates through the integrated management of major childhood illnesses and disorders - diarrheal disease, pneumonia, measles, malaria, and malnutrition - which had previously been implemented separately. The basic principles of the IMCI strategy are to promote health measures on the "front lines" by laying down guidelines for methods and systems for eliminating the causes of disease and treating them effectively when they occur and, based on these guidelines, setting up organizations, fostering human resources, and setting up facilities and equipment. Specifically, the program consists of the implementation of preventive measures such as following up on unvaccinated infants through the Expanded on Immunization (EPI), promotion of breastfeeding, supply of vitamin A and iron supplements, and health education in coordination with counseling concerning

simple life-saving techniques such as oral rehydration therapy (ORT) and first-aid treatment for malaria. By 1997, IMCI had been introduced in 34 developing countries and was expected to be introduced in many other countries.

1-2-5 Measures against Infectious Diseases

Emerging and Reemerging Infectious Diseases

The development of science and technology after the Second World War also brought considerable benefits to the field of medicine. In the fight against infectious diseases, in addition to vaccines and antibiotics, there have been significant advances in the analysis of pathogens at the genetic level to the extent that most infectious diseases are no longer life-threatening. There are even infectious diseases, such as smallpox, that have been eradicated from the world by vaccines. However, changes in the global environment accompanying the use and development of drugs have resulted in the resurgence of infectious diseases that were no longer considered dangerous, or the appearance of completely new diseases. Malaria and tuberculosis, for example, are reemerging infectious diseases while Ebola virus is an emerging infectious disease. At present, organizations such as WHO and the Centers for Disease Control (CDC) are taking measures to fight these infectious diseases.

HIV/AIDS

Under the leadership of the Joint UN Program on HIV/AIDS (UNAIDS), an independent organization co-sponsored by WHO and six other AIDS-related bodies, new drugs effective against HIV itself and drugs such as AZT, which control the reduction of immune functions due to AIDS, are being developed, and education for the prevention of AIDS and social care for AIDS patients are being promoted throughout the world.

Malaria

At the World Malaria Conference in 1992, a four-pronged malaria control strategy was proposed based on early diagnosis, early treatment, establishment of an epidemiological information system. and environment-friendly sustainable prevention measures such as vector countermeasures. In her speech upon taking office as Director-General of WHO in July 1998, Dr. Gro Harlem Brundtland announced launching of a new malaria control strategy, the Roll Back Malaria Initiative, as one of WHO’s most important challenges. At the Birmingham Summit in the same year, under the leadership of then Japanese Prime Minister Hashimoto, the Global Parasite Control Initiative was announced, in which the developed countries agreed to strengthen their cooperation in the fight against malaria.

Tuberculosis

Tuberculosis is an infectious disease that has undergone a resurgence through the emergence of

drug-resistant bacteria, but DOTS (Directly Observed Treatment, Short-course), in which drugs are administered under the direct supervision of a doctor, has proved to be an effective method of treatment. With the spread of HIV/AIDS, the number of tuberculosis patients has increased rapidly in both developed and developing countries. In 1999, WHO declared tuberculosis a global emergency and called for all countries to make the utmost efforts to control its further spread.

1-2-6 Measures against Malnutrition

Food Security

At the World Food Summit held in Rome by the Food and Agriculture Organization of the United Nations (FAO) in 1996, the Rome Declaration on World Food Security was adopted with the aim of establishing a socio-economic environment in which a sustainable and stable supply of food could be guaranteed for all the world's population. In securing sufficient food for families and children, the declaration stressed the importance of the role of women, the importance of breast milk nutrition, the need to give particular consideration to female infants, and advocated the elimination of inequality and alleviation of poverty, the policies for sustainable rural development with local participation, and the implementation of appropriate commercial policies. Since then, in order to ensure that the proposals of the Declaration are reflected in actual policies, developing countries have been drawing up national nutrition improvement programs with support from WHO, UNICEF, and FAO. In most countries, concrete plans have been formulated and have now entered the implementation stage.

Moreover, the UN food assistance organization, the World Food Programme (WFP), in coordination with the World Food Organization (WFO) and the International Fund for Agricultural Development (IFAD), have been promoting projects in response to emergency situations and food requirements for development. And in recent years, the WFP, in cooperation with organizations such as UNICEF, has been providing three types of food assistance: emergency food supplies for people in strife-torn areas or victims of natural disasters ("food for survival"); support for regional projects in developing countries ("food for development"); and assistance in return for participation in development projects ("food for work").

Malnutrition: The Silent Emergency

In the "State of the World's Children 1998," the problem of malnutrition of infants and women was described as the "silent emergency." While sounding the alarm concerning this grave situation, the report outlined the measures being taken against malnutrition in coordination with developing countries by United Nations organizations such as the WHO and UNICEF as well as donor organizations and NGOs in advanced countries. These measures include nutritional education through community activities, diffusion of child development monitoring systems, the promotion of breastfeeding through the Baby-friendly Hospitals Initiative (BFHI) and market restrictions on mother's milk substitutes, and

promotion of the intake of micronutrients such as iodized salt to counteract iodline deficiency and vitamin A-fortified sugar. Regarding the problem of AIDS infection of infants through breastfeeding (which accounts for one third of infant AIDS infections), appropriate guidelines have been established and assistance is being provided for the provision of mother's milk substitutes in these cases.

1-2-7 Application of the Sector Program

Structural adjustment measures under the guidance of the World Bank and IMF are currently being implemented on the basis of the Sector Program (SP), which aims at integrated development in each sector of developing countries through coordination between the developing country and aid donors. This has been the principal form of development assistance in African countries such as Ghana, Ethiopia, and Tanzania. In the health and medical care sector, in addition to the improvement of government expenditure that the World Bank emphasized, and promotion of competition to improve health and medical care services, measures have been taken to ensure the independent development of health services for those who have been left behind (particularly the poor) as a result of market economy promotion and rationalization policies. In the Sector Program, the participating donor organizations provide funds to a common funding basket and, broadly recognizing the ownership of the governments of developing countries, provide completely integrated development assistance for projects in the same sector while striving to maintain conformity with the macroeconomic situation.

The main drawback of the Sector Program is its tendency to focus on responses in a single sector to problems such as poverty that range over many different sectors. In the health and medical care sector too, measures that are sufficiently wide in scope cannot be taken for projects that require close coordination with other sectors, such as primary health care. Moreover, regarding the funding basket, there are donor organizations that cannot respond beyond their budget, with the result that donors participating in the Sector Program cannot always keep in step with each other.

1-2-8 The Health and Population Sector and Other Challenges

The Population Bonus

In 1999, designated as the International Year of Older Persons, the UNFPA and other international organizations, together with national governments, gave careful consideration to their response to the challenges posed by the future increase in the aged population and the aging of the population as a whole. Although the general trend in recent years has been towards a fall in the birth rate, the children of the baby boom generation are now reaching working age. As a result, while the number of children born will tend to decrease over the next 10 to 20 years, the young working population will increase. This situation is known as the "population bonus." During this period, in order to keep pace with rapid economic development, it will be necessary to strengthen the foundations of society through targeted

social investment in the health, education, and social security sectors. In the health and medical care sector, with the increase in the aged population, it will be essential to respond to expanding needs for nursing care for the aged and for treatment of non-infectious diseases such as malignant tumors and circulatory disorders.

Health and Medical Care Assistance for Refugees

After the collapse of the East-West Cold War political structure in the early 1990s, successive local conflicts occurred in countries such as former Yugoslavia, Afghanistan, and former Zaire. Each of these conflicts resulted in several hundred thousand refugees, and there are now almost 30 million refugees throughout the world. Many of these refugees, in addition to living in unhygienic environments and succumbing to infectious diseases and malnutrition, are injured by land mines, and suffer from psychological problems. The Office of the United Nations High Commissioner for Human Rights (UNHCR) and other international organizations, various national organizations, and many NGOs are providing relief for refugees. In addition to assistance in the health and medical sector such as food relief and medical services, there is great demand for measures to deal with psychological problems and rehabilitation for land mine victims.

1-3 Japan's Development Cooperation in the Health and Population Sector

1-3-1 Current Status of Japan's Health and Population Development Cooperation

(1) Current Status of Japan's Official Development Assistance (ODA)

The ODA Budget

In 1998, Japan provided a total of 1,404.7 billion yen in ODA, the highest amount in the world for the eighth consecutive year. While the DAC countries together disbursed an aid sum equivalent to 0.23% of their combined GNP, Japan disbursed a sum equivalent to 0.28% of its GNP, for a DAC country ranking of 12th out of 21.

Basic ODA Policies

According to The Medium-Term Policy on Official Development Assistance published in 1999, Japan's basic ODA policies are founded on Japan's recognition that:

* ODA is an obligation that Japan must satisfy as the world's second largest economy.
* ODA bolsters Japan's credibility and standing in the eyes of the international community.
* The contribution of ODA to world peace and stability promotes the interests of Japan.

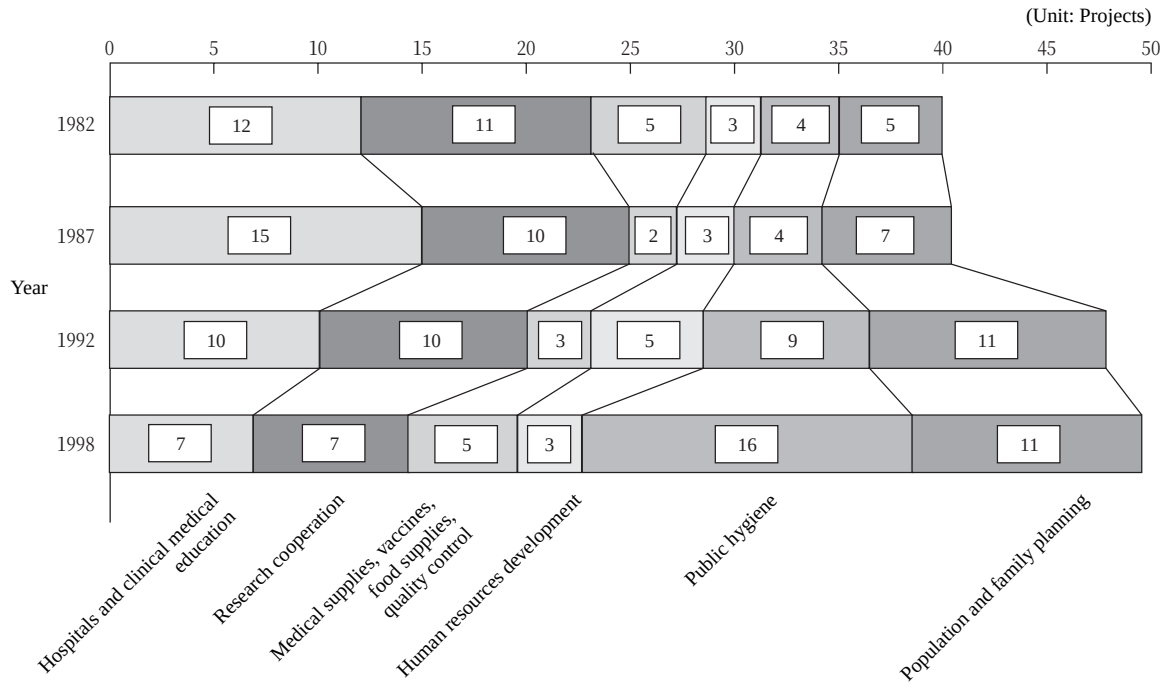
Accordingly, Japan pursues the following basic policies:

* Promotion of “ownership” (self-help efforts) and achievement of concrete objectives.
* Sufficient policy dialogues with developing countries.
* Coordination with other donors, organizations, and NGOs.
* Human-centered sustainable development and human security.
* National involvement in aid and greater visibility.

The priority issues and sectors are as follows:

* Support for poverty reduction programs.
* Support for economic and social infrastructure.
* Human resources development and intellectual support.
* Response to global issues such as environmental conservation, population, AIDS, food shortages, energy, and drug abuse.
* Development assistance following conflicts and natural disasters.
* Response to issues of debt relief.

Figure 1-3 Trend of Number of Projects in Each Cooperation Sector

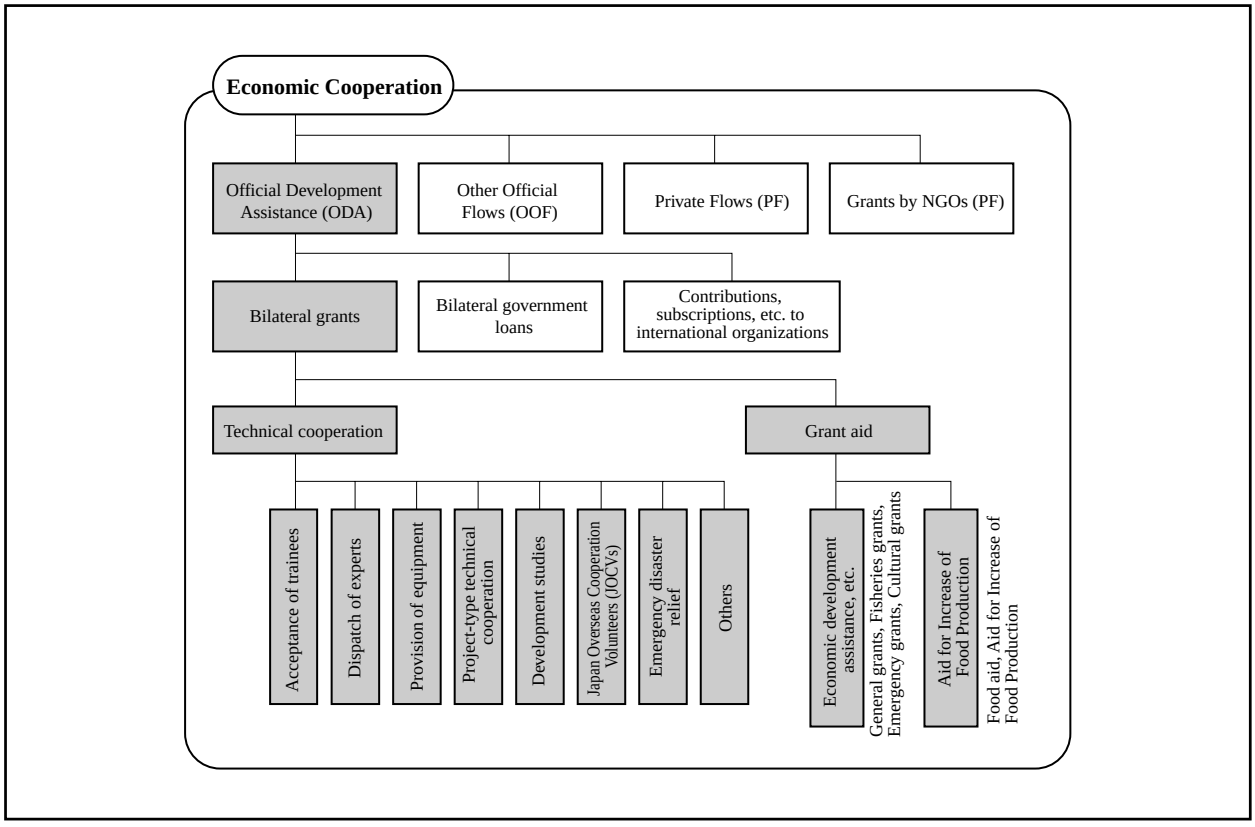


Note: The number of projects is the total of projects continuing from the previous year and new projects or projects completed in that year.
Source: Materials for 31st Conference Overseas Medical Cooperation Committee

The ODA System

ODA is broadly divided into three types: (1) Bilateral grants; (2) Bilateral government loans; and (3) Contributions and subscriptions to international organizations (multilateral aid). Bilateral grants are further sub-divided into technical cooperation through technology transfers and grant aid - the provision of funds without any repayment obligation. (See Figure 1-4.)

Figure 1-4 The ODA System



(2) Current Status of Japan's Health and Population Projects

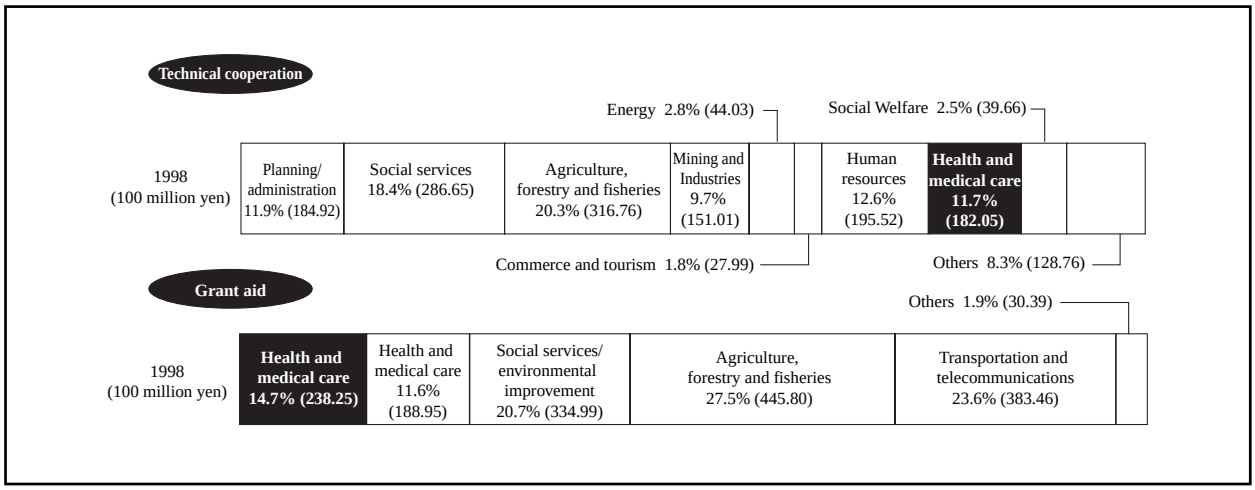
Basic Approach to the Health and Population Sector

In 1998, Japan's annual ODA report included a special section on the health and medical care sector, which stated that health and medical care is a field which should be given the highest priority since it is directly related to the humanitarian ideal that constitutes the underlying principle of ODA. As priority fields in this sector, the report cited primary health care, medical referral systems, reproductive health, measures against emerging and re-emerging diseases such as HIV/AIDS, malaria and tuberculosis, and elimination of polio and other measures to ensure the health of children. In addition, priority is being placed on a shift in emphasis from advanced medical treatment care to basic medical services, support for systems whereby the burden is partially borne by aid recipients to ensure sustainabilty, utilization of local resources, and development medical services in remote areas.

Budget for the Health and Population Sector

According to the figures for ODA bilateral grants by sector in 1998, both technical cooperation and grant aid in the health and medical care sector accounted for only just over 10% of all grants. In spite of the recognition of the importance of this sector, this was a lower allocation than the agriculture, forestry and fisheries sector, the transportation/telecommunications sector, and the social services sector. (See Figure 1-5.)

Figure 1-5 Sectoral Distribution of Bilateral Grants (1998)



Outline of Health and Population Programs

Japan International Cooperation Agency (JICA) is responsible for implementing the technical cooperation and promoting the grant aid that constitute Japan's bilateral ODA grants. JICA administers project-type technical cooperation consisting of three components: dispatch of experts, acceptance of trainees from developing countries, and provision of materials and equipment. In the field of health and population, about 50 of these projects are currently being implemented throughout the world. JICA also dispatches Japan Overseas Cooperation Volunteers to provide nursing and other services, promotes the enhancement of medical facilities and equipment, provides vaccines and related equipment to assist with polio eradication and the Expanded Program on Immunization (EPI), and provides contraceptives and basic drugs for the expansion of reproductive health projects. Since 1998, JICA has also been making preparations to provide support for reproductive health-related community-based living environment improvement projects being conducted by NGOs in developing countries with the participation of local residents. This support is to be provided as a comprehensive development welfare assistance program in coordination with assistance in other sectors.

Transition of Health and Population Programs

In the post-war period, full-scale assistance in the field of health and population began with the Cambodia Medical Center Project in 1959. At that time, Japan's assistance took the form of a

straightforward transfer of technology, transferring Japanese medical technology to central hospitals in developing countries or providing assistance with research into infectious diseases at research institutions.

Population control and family planning-related projects were first implemented in the early 1970s. This relatively early project development was made possible by the fact that the know-how gained from Japan's post-war regional activities was easy to apply in developing countries and it was easier to establish a system in Japan for overseas aid in this field than in the medical services field.

When JICA was established in 1974, it implemented 39 health and medical care projects, mainly for the provision of basic medical education, research into infectious diseases, and assistance for hospitals. Japan's contribution to the project to fight smallpox in Ethiopia is particularly worthy of mention. This local smallpox eradication project, which was conducted in cooperation with Japan Overseas Cooperation Volunteers, made a significant contribution to the complete eradication of smallpox from the world in 1980.

From the late 1970s, a system was set up for JICA-based assistance programs, enabling Japan to take an active part in projects responding to global trends and needs. In the health and medical care sector, regional programs were drawn up and implemented in response to heightened global debate focusing on regional health issues around the time of the Alma-Ata Declaration in 1978.

In the 1980s, projects came to be formulated on the basis of the Primary Health Care (PHC) approach, responding to a wide variety of needs, including nurse training, population education, and vaccine production. During this period, Japan's ODA budget increased rapidly and the world's expectations regarding aid from Japan became higher.

From the beginning of the 1990s, ties were strengthened with NGOs and volunteer organizations, which had previously not been involved in ODA, making it easier to respond to projects that required direct cooperation with local communities in developing countries. This period also saw a shift in the nature of ODA projects from the concept of technology transfer to development assistance projects that placed emphasis on the active participation and ownership of developing countries, leading to the establishment of a project system focusing on human-centered development.

In the health and medical care field, development welfare assistance programs providing direct support for community-based health and family planning projects conducted by local NGOs have been implemented in developing countries like Ghana and Bangladesh. Projects have also been conducted in Kenya, Jordan, and other countries on the basis of new concepts such as community development with the participation of local citizens and health improvement through the amelioration of the living environment. In addition, projects have also been started with the aim of reducing poverty by integrating health services, education, and regional development, such as the comprehensive social development program currently being implemented in Ghana.

1-3-2 Japan's Challenges in Health and Population Development Cooperation

(1) Strengthening of the Country-Specific Sector Approach

Development problems in the health sector and the approaches needed to address them vary according to the particular characteristics of each developing country. It is therefore necessary to formulate assistance policies on the basis of dialogue with the counterpart government while keeping all the sectors in view. To this end, the strengthening of the functions of the overseas embassies and JICA offices is an urgent task.

However, assistance in the health sector is not only conducted through participatory, bottom-up operations such as the PHC approach. It is also necessary to strengthen the medical referral systems needed for PHC, as well as establishing systems for the research underlying local infectious disease countermeasures, for the top-down supply of materials, equipment, and service workers, and for cooperation from a comprehensive viewpoint where sectors overlap, such as administrative and financial capacity building for health services. From this viewpoint, it is necessary to be able to adopt a flexible response which respects the ownership and potential for sustainability of developing countries while placing importance on efficiency in the implementation of short-term solutions such as the eradication of polio.

(2) Establishment of an Assistance Scheme from the Perspectives of Poverty Reduction and Living Environment Improvement

Health is not an issue that can be tackled simply through health and medical care sector; it is intimately related to the problems of poverty and the living environment. It is therefore necessary to establish a comprehensive scheme for social development assistance whereby poverty reduction policies and environmental development are implemented together with the improvement of health sector.

(3) Systematization of Project Experience by Sector and Information Disclosure for the Promotion of Appropriate Technical Development

Although many reports on Japan's ODA projects have been produced, these reports tend to cover both the operational and technical aspects of all projects of all the various projects conducted, making it difficult to get a clear overall picture of projects of the same type from a technical perspective. In the health and medical care sector, even though many maternal and child health projects have been conducted in conjunction with Maternal and Child Health Handbook record-keeping programs, these technical reports have not been systematically put in order. As a result, there have been hardly any comparisons among projects or successive accumulation of data. Since this kind of systematic accumulation of records of project experience is indispensable for appropriate technical development and improvement, it is essential to establish a system for the systematic collection and analysis of technical data at project sites. It is also important that this kind of information is publicly disclosed so

that more multi-faceted analysis can be conducted.

(4) Fostering and Securing Human Resources for Health and Population Development Cooperation

In development cooperation projects implemented by Japan on an ODA basis, the experts dispatched overseas have mainly been employed through the recommendations of civil servants or government offices. However, in view of the quantitative increase and diversification of assistance needs in recent years, there has been a growing demand for the participation of local governments, private-sector organizations or NGOs, and for experts who are professionally engaged in their field of specialization. To secure these human resources, it is necessary to further strengthen the training system to provide the specialist knowledge needed for development projects. It is also necessary to develop a framework whereby the cooperation of universities and other educational institutions can be requested in order to foster human resources for aid project administration and research activities.

(5) Establishment of Development Cooperation as an Applied Science

Aid projects such as measures against infectious diseases cannot be effective unless they are conducted through the integration of a basic scientific approach with practical measures in the field and are meticulously monitored at the implementation stage. It is therefore vital to guarantee the social status of people involved in this work by establishing development assistance as an applied science in which academics and workers in the field operate in close cooperation.

REFERENCES

<Japanese>

Asian Population and Association (1998) *Five Years from the ICPPD (Declaration of the Diet Members' Conference on Population and Development)*. APDA Resources Series 5.

Economic Planning Bureau (1999) *Wagakuni no seifu kaihatsu enjo [Japan's ODA 1999]*. Ministry of Foreign Affairs.

Hashimoto, K. (1999) *Kokusai josei hayawakari '99 [The International Situation at a Glance 1999]*. PHP Research Institute.

Ikeda, M. (1996) *Kenko no Kaihatsu shi - Iryoenjo to ouyou jinruigaku [History of Health Development-Medical Care Assistance and Applied Anthropology]*. Faculty of Letters, Journal No. 49.: Kumamoto University Literary Association.

International Development Center for Japan (1998) *Hoken-iryo bunya niokeru enjoseisaku ritsuan no tameno kiso chousa [Basic Survey for an Assistance Policy Proposal in the Health and Medical Care Sector]*.

JICA (1999) *Kokusai kyoryoku jigyoudan nenpo 1999 nendo ban [JICA Annual Report FY 99]*.

JICA (1998) *DAC shinkaihatsu senryaku dai 1 kan soron [DAC New Development Strategy]*. Vol. 1: Overview.

JICA (1998) *DAC shinkaihatsu senryaku dai 2 kan bunyabetu kento [DAC New Development Strategy]*. Vol. 2: Sectoral Survey.

Mori, T. Director "*Sekai no kekkaku ryuko to taisaku -sono kage to hikari-*" *[The Worldwide Spread of Tuberculosis and Countermeasures-Shadow and Light]*. Tuberculosis Research Institute. URL (http://www.jata.or.jp)

Shimizu, M. (1998) *Sekai no HIV/AIDS kansen -boshi hoken bunya kara- [World HIV/AIDS Infection - from the Maternal and Child Health Sector]*. UNAIDS.

UNDP (1998) *Ningen kaihatsu hokokusho [Human Development Report 1998]*.

UNICEF (1992) *Sekai Kodomo Hakusho [State of the World's Children Report]*.

Ibid. (1998).

Ibid. (1999).

UNICEF (1996) *Kuniguni no zenshin [The Progress of Nations]*.

Ibid. (1997).

Ibid. (1998).

UNFPA (1997) *Sekai jinko hakusho [The State of the World Population]*.

Ibid. (1998).

Warner, D., and Sanders, D. *Inochi, Kaihatsu, NGO [Life, Development, NGOs]*. Shinhyoron.

<English>

The World Bank (1993) World Development Report 1993.

WHO (1998) World Health Report 1998.

2. Current Conditions in Regional Health and Medical Care in Okinawa

2-1 Basic Information on Okinawa

2-1-1 Natural and Geographical Features

Okinawa Prefecture is the Southwestern-most prefecture in Japan, extending over an area of ocean measuring 1,000 km from East to West and 400 km from North to South, and comprising 57 large and small islands (42 of which are inhabited). Furthermore, each of the outlying islands has differing geology, topography, and other natural conditions, meaning that the prefecture is characterized by extensive diversity.

Compared with distances from Naha of 660 km to Kagoshima, 861 km to Fukuoka, and 1,554 km to Tokyo, distances are 630 km to Taipei, 820 km to Shanghai, and 1,440 km to Hong Kong, such that Okinawa occupies a central geographical location between mainland Japan and East Asia (see Figure 2-2).

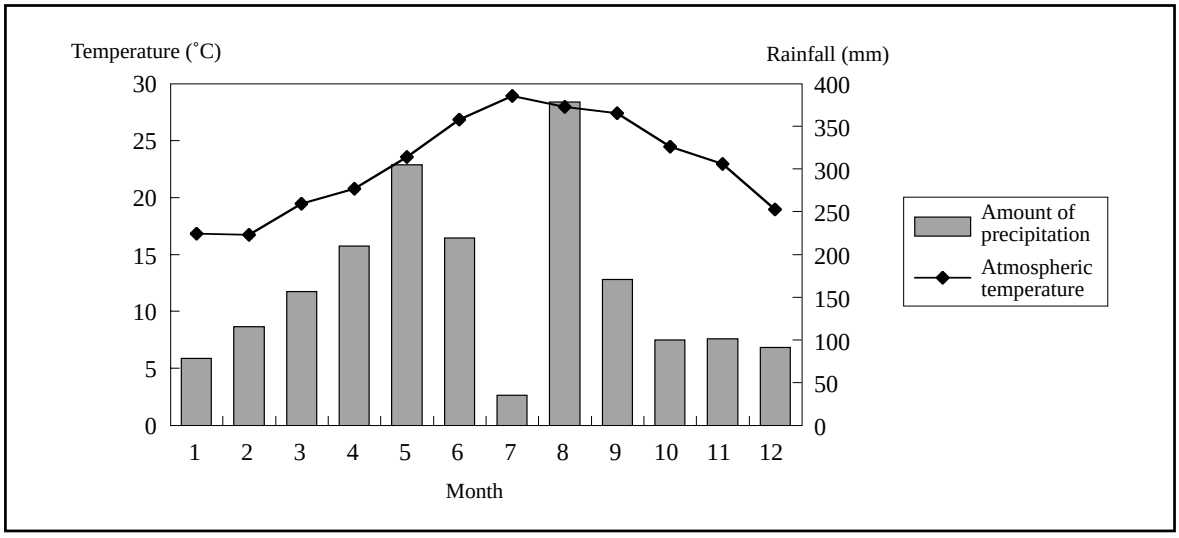
Okinawa Prefecture's position between the latitudes of 24° and 28° gives it Japan's only subtropical zone oceanic climate; its average temperature on an annual basis is warm, at about 23℃. Independent ecological systems have developed that cannot be found on the mainland, and various unique varieties of subtropical flora and fauna such as mangroves, the Iriomote mountain cat, and the Noguchi mole cricket. Many of these species are of great scientific value, representing world-class richness in ecological resources.

Being part of a subtropical zone, Okinawa Prefecture is warm throughout the year and does not get any frost or snow. The volume of rainfall is high, so the climate is one of high temperature and high humidity. Typhoons (particularly with high winds) frequently strike during the summer season, causing substantial damage to agricultural crops. However, generous amounts of sunshine also mean that there is widespread overlap between the Northern and Southern limits of the tropical and temperate ecosystems, which has allowed the accumulation of a rich and diverse biomass.

Some 55% of the prefecture's soil consists of Kunigami marge (mainly reddish-yellow clay), which is characterized by weak particulate adhesion, poor permeability to rain, and poor sedimentation. It is thus susceptible to erosion by squall-like rainfall with large drops, leading to deposition on the ocean floor and impact on the marine ecology.

With its composition of islands and subtropical climate, Okinawa is unique within Japan. Many similarities can be found in areas ranging from agriculture to medicine with the island/archipelago states and subtropical regions of Southeast Asia and the Pacific.

Figure 2-1 Average Temperature and Precipitation in Okinawa Prefecture



Source: Okinawa-ken tokei nenkan [Okinawa Prefecture Statistical Yearbook], Okinawa Prefecture.

2-1-2 Historical and Cultural Characteristics

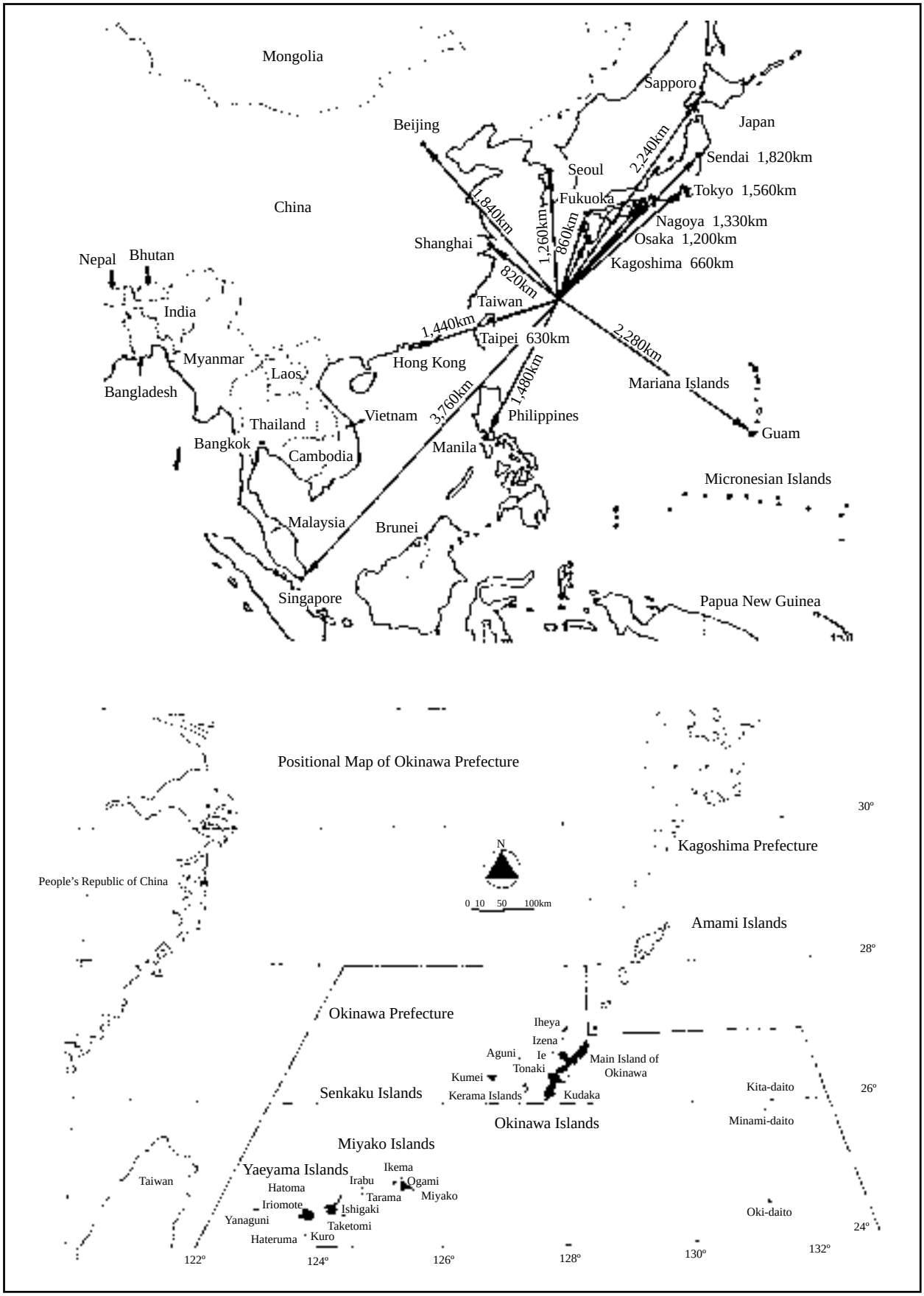
Trade and Exchange with Various Southeast Asian Countries

Okinawa is geographically close to China and Southeast Asia, and there was formerly active diplomacy and trade with these countries. During the period of the Ryukyu Dynasty (particularly from the 14th to the 16th century), trade was conducted throughout the Southeast Asian region, including Japan, China, Korea, Siam, Java, Sumatra, and Annam. Strong influence can be seen from these Southeast Asian countries on Okinawan historical and cultural legacies, including traditional arts, castles, etc. These historical experiences helped form an independent culture that ingeniously combined elements from Japan and Southeast Asia, and it is theorized that, “Okinawan culture is the mediating factor in explaining the ‘Southern cultural’ aspects that underlie Japanese culture” (as stated in the initial publication marking the founding of the Japan-Southeast Asia Exchange Center).

U.S. Sovereignty

Okinawa Prefecture was the only region of Japan to become a conventional battlefield during the Second World War, and many of the inhabitants of the prefecture lost their lives during the fighting. The area was governed by the United States after the war, and was legally treated by Japan as a foreign territory until it was returned in May 1972. Public Health Centers were set up in various locations by the U.S. Military Government, and these played important roles in terms of the provision of guidance for health and hygiene. Malaria, filaria, and other diseases were obliterated as a result, and this was a factor in the improvement of the health of the residents and in the longevity that generally characterizes the prefecture.

Figure 2-2 The Position of Okinawa Prefecture



Emigration

Large numbers of Okinawans emigrated in the periods before and after the war, and there are currently over 270,000 people of Okinawan descent living overseas. These people have fully adapted to their host countries, while also building overseas Okinawan networks that have achieved strong ties with Okinawa Prefecture in terms of culture and social exchange.

Table 2-1 Changes in Age Composition

Units: Persons, and %

Okinawa Prefecture	1980		1985		1990		1995	
	Population	Compositional Ratio	Population	Compositional Ratio	Population	Compositional Ratio	Population	Compositional Ratio
Total Population	1,106,559	100.0	1,179,097	100.0	1,222,398	100.0	1,273,440	100.0
0-14 Years	325,393	29.4	322,523	27.4	299,836	24.5	281,302	22.1
15-64 Years	694,174	62.7	754,119	64.0	793,287	64.9	842,752	66.2
65 Years and Over	85,819	7.8	101,947	8.6	121,082	9.9	148,567	11.7
(Men)	543,692	49.1	581,102	49.3	598,669	49.0	624,737	49.1
0-14 Years	166,213	15.0	164,912	14.0	153,376	12.5	143,952	11.3
15-64 Years	345,231	31.2	378,548	32.1	396,296	32.4	423,803	33.3
65 Years and Over	34,541	2.9	37,433	3.2	44,588	3.6	56,828	4.4
(Women)	562,867	50.9	597,995	50.7	623,729	51.0	648,703	50.9
0-14 Years	159,180	14.4	157,611	13.4	146,460	12.0	137,350	10.8
15-64 Years	348,943	31.5	375,571	31.9	396,991	32.5	418,949	32.9
65 Years and Over	54,298	4.9	64,514	5.5	76,494	6.3	92,039	3.3
Men per 100 Women		96.6		97.2		96.0		96.3
Juvenile Population Index		46.9		42.8		37.8		33.4
Elderly Population Index		12.4		13.5		15.3		17.6
Dependent Population Index		59.2		56.3		53.1		51.0
Aging Index		26.4		31.6		40.4		52.8

Source: Kokusei chosa [National Census], Management and Coordination Agency

Okinawa: A Prefecture Characterized by Longevity

Japan leads the world in terms of longevity, as Okinawa is the prefecture with the greatest longevity in Japan as measured by the number of residents aged 100 or older.

Average life expectancy at birth in 1995 in Okinawa was 77 for men and 82 for women, the longest in Japan. Average remaining life expectancy at age 65 is also the longest for both men and women.

As of 1995, there were 47 men and 215 women in the prefecture aged 100 or older. This translates into longevity rates of 7.52 men and 33.14 women aged 100 or older per 100,000 population, both of which are much higher than the corresponding national averages.

Table 2-2 National Comparison of Over-100 Year Longevity Rates (per 100,000 population)

	1990		1995	
	Okinawa Prefecture	Japan	Okinawa Prefecture	Japan
Men	2.84%	1.07%	7.52%	1.62%
Women	23.25%	4.09%	33.14%	7.81%

Source: Kokusei chosa [National Census], Management and Coordination Agency

Okinawa is thus the prefecture with the greatest longevity, but this applies to people born before Second World War. Recent changes in the dietary habits of prefectural citizens are not necessarily appropriate to longevity, and various factors such as modifications in lifestyle are leading to increased incidence of adult diseases, a higher death rate for those aged 50 and under, etc. There is accordingly some concern as to whether Okinawa can maintain the distinction of being a prefecture characterized by longevity.

Keywords: Subtropical zone oceanic climate, Mangrove, Biomass, Trade and exchange with Southeast Asian countries, U.S. Military Government, Emigration, Societies of people of Okinawan origin, Prefecture characterized by longevity, Average life expectancy, Over-100 year longevity rate.

2-2 Current Conditions in Health and Medical Care in Okinawa

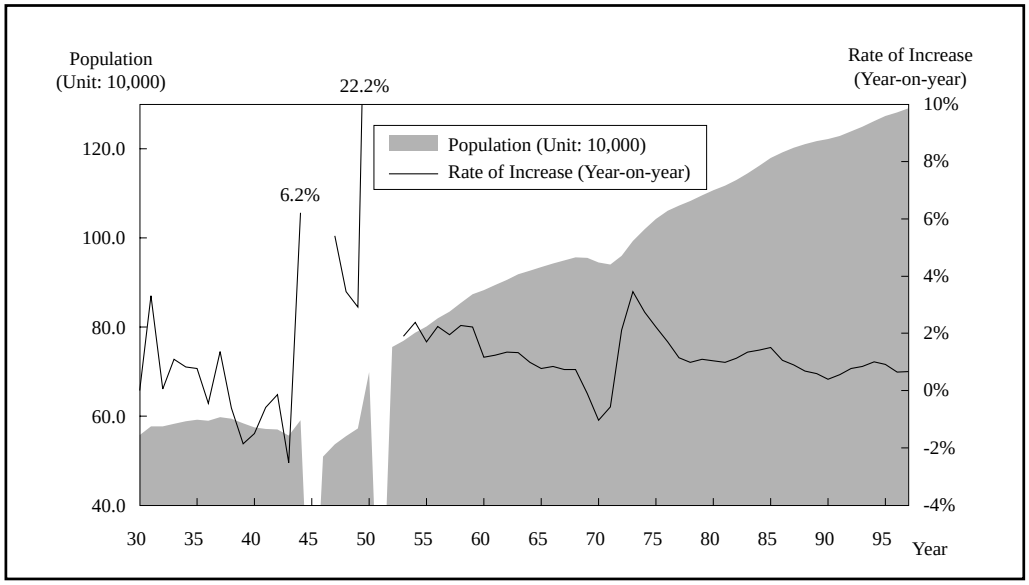
2-2-1 Basic Information

(1) Changes in Population

The population of Okinawa Prefecture at the time of its return to Japan in 1972 was 950,000 (prefectural estimated population), but this figure had risen to 1.3 million by 1998. This represents an increase of about 350,000 people, for an average annual growth rate of 1.2%.

The changes from 1955 to the time of the return are characterized by both increases and decreases (see Figure 2-3). The movements seen at the return are social fluctuations associated with the change of government. Looking at the transitions during the more than 20 years following the return, the greatest upswing is found to be the year-on-year 3.5% rate of increase recorded in 1973. The growth rate has tended to decline from 1975 onward, reaching 0.9% in 1994.

Figure 2-3 Population Changes in Okinawa Prefecture



Note 1: National census population and natural increases are from materials by the Health and Welfare Policy Division. No data available for 1945 or 1950.

Note 2: 1944 is from the national census (Statistics Bureau of the Prime Minister's Office).

Note 3: Because the number of U.S. Military employees residing in housing facilities is unknown for the year 1952, there is a discrepancy between the total figure and the itemized breakdown.

Note 4: The years 1991-1994 represent corrected statistical population based on the 1995 national census.

Source: "Report on Population Movements in Okinawa Prefecture" and "Estimated Population," Statistics Division, Okinawa Prefecture.

According to a breakdown by area within the prefecture, a trend can be seen towards population decline in the Northern part of the prefecture, as well as towards concentration of population in the Central-southern part. By 1998, the latter accounted for 82.6%. At the same time, with the exception of Miyako and Ishigaki, there was an overall declining trend for the outlying islands. Thus, while the population of the entire prefecture was increasing, this was made up of a population distribution in which concentration occurred in the Central-southern area of the prefecture, together with relative depopulation of rural, outlying island areas.

Viewed according to age composition in terms of age tri-segmented population, the 1995 national census indicated a juvenile population (0-14 years) of 22.1%, a production age population (15-64 years) of 66.2%, and an elderly population (65 years and older) of 11.7%. An outstanding characteristic in comparison with the nation as a whole is that the share represented by the juvenile population is the highest (the nationwide figure is 15.9%), being about six full points greater than for Japan's overall population.

In terms of changes from 1980 onward, there has been some deceleration of the above-mentioned trends. The juvenile population ratio has declined while the aging ratio has risen, such that aging is seen to be progressing. Viewed by changes in population age composition, the population structure is

gradually approaching the national average.

By region, the aging ratios of the Northern part of the prefecture and the outlying islands are strikingly high, and the simultaneous progression of relative depopulation suggests that population stabilization will be a major issue in the context of economic development.

(2) Changes in Production Activities

The gross product of the prefecture for 1997 was 3.4 trillion yen, comprising 0.6% of that of the entire country note that the population is (1% of the total). In terms of changes following the return of Okinawa to Japan, the average annual growth rate was 15% from 1972 to 1981, and 5.8% from 1982 to 1993.

By industry as of 1997, primary industry represented 79.2 billion yen, secondary industry represented 614.1 billion yen (including 185.4 billion yen for manufacturing and 413.1 billion yen for construction), and tertiary industry represented 2.7931 trillion yen, such that the tertiary ratio was quite high. The high compositional ratio accounted for by tertiary industry is characteristic of Okinawa Prefecture's industrial structure. The tourism industry occupies a prominent position, with over four million tourists visiting each year; tourism revenues were approximately 417.3 billion yen in 1997, accounting for about 10% of the gross expenditure of the prefecture.

Per capita income for residents of Okinawa Prefecture was 2.19 million yen, which is 69.8% of the corresponding national average. Although economic disparities narrowed due to rapid economic development following the reversion (the figure was 59.5% in 1972), income remains the lowest in the nation.

The employment situation in Okinawa is also a constant and substantial problem. The unemployment rate is the highest in Japan, and the recent economic slump has pushed this to 6.0% (1997), roughly twice the national average of 3.4%. High unemployment among young workers aged 18 to 25 is characteristic of Okinawa, revealing the weakness of industrial activity within the prefecture.

2-2-2 Health Indices of Prefectural People

(1) Population Movement and Composition of Disease

Population movement in Okinawa Prefecture can be summarized as follows. There were 17,064 births in 1996, yielding a birth rate per 1,000 population of 13.4. This figure is considerably higher than the national average (9.7), and has been the highest in the nation for 23 consecutive years. The number of deaths in the same year was 7,038, for a death rate per 1,000 population of 5.5. This is lower than the national average, ranking second from the bottom among all prefectures.

With regard to the composition of disease, national shifts are reflected in Okinawa as well, with the three major adult diseases of malignant neoplasm, heart disease, and cerebral vascular disease becoming conspicuous as the leading causes of death in place of infectious diseases such as tuberculosis.

Malignant neoplasm overtook cerebral vascular disease to become the No. 1 cause of death in 1977, with the latter tending to decline in rank over time. This is considered to be a reflection of better control of high blood pressure, which is a cause of cerebral vascular disease.

Table 2-3 Composition of Disease in Okinawa Prefecture

	No. 1	No. 2	No. 3	No. 4	No. 5
1980	Malignant Neoplasm	Cerebral Vascular Disease	Heart Disease	Old Age	Pneumonia/ Bronchitis
1985	Malignant Neoplasm	Heart Disease	Cerebral Vascular Disease	Pneumonia/ Bronchitis	Old Age
1997	Malignant Neoplasm	Heart Disease	Cerebral Vascular Disease	Pneumonia/ Bronchitis	Accidents/ Toxic Effects

Source: Imu gaiyo [Medical Overview] Fiscal 1997, Medical Affairs Division, Department of Environmental and Health, Okinawa Prefecture.

(2) Medical Expenses in Okinawa Prefecture

According to the 1995 edition of the Kokumin kenko hoken iryo nenpo [Citizens' Health Insurance Medical Care Yearbook], per capita medical expenses in Okinawa Prefecture were ¥123,000, the lowest in all of Japan. Next to Okinawa in terms of low expenses were Chiba, Saitama, Kanagawa, and Ibaraki. Conversely, the highest expenses were recorded in Tokushima Prefecture, at ¥208,000, followed by Hokkaido, Toyama, Ishikawa, and Kochi. The difference between Tokushima Prefecture, the highest, and Okinawa Prefecture, the lowest, was 1.7 fold.

However, the picture is quite different in terms of medical expenses for the elderly, with Okinawa ranking 14th at ¥660,000, higher than the national average. The highest such expenses were found in Hokkaido at ¥852,000, followed by Osaka, Kochi, Fukuoka, and Kyoto. The lowest figure was ¥486,000, in Nagano Prefecture, with a difference versus Hokkaido of 1.8 fold. (The corresponding difference against Hokkaido for Okinawa was 1.3 fold.)

2-2-3 Current Conditions with Respect to Health and Medical Care Institutions and Facilities

In terms of both material and human resources, the provision of medical care in Okinawa Prefecture as a whole is at about 80% of the national average (although the number of nurses per 100,000 population exceeds national levels). Considering the situation with respect to health and medical care facilities, the level of availability/equipment of hospitals and clinics progressed rapidly following the return, and disparities are tending to narrow. Nevertheless, national levels have still not been reached. In terms of numbers of facilities per 100,000 population, the number of hospitals is 92.0% of the national average, while the corresponding numbers of general clinics and dental clinics are 66.3% and 83.9%, respectively. However, the number of general hospital beds is 105.8% of the national average, slightly surpassing

the level of the nation as a whole.

Table 2-4 Comparison of Medical Care Institutions

As of October 1, 1996

	Hospitals		General Clinics		Dental Clinics	
	Japan	Okinawa	Japan	Okinawa	Japan	Okinawa
Total Number	9,490	88	87,909	594	59,357	508
Per 100,000 Population	7.5	6.9	69.8	46.3	47.2	39.6
Percentage of the National Average	92.0%		66.3%		83.9%	

Source: Imu gaiyo [Medical Overview] Fiscal 1997, Medical Affairs Division, Department of Environmental and Health, Okinawa Prefecture.

Table 2-5 Comparison of Numbers of Beds

As of October 1, 1997

	Actual Number			Per 100,000 Population		
	Number of Hospital Beds		Number of General Clinic Beds	Number of Hospital Beds		Number of General Clinic Beds
		General Hospital Beds			General Hospital Beds	
Nation	1,664,629	1,262,838	246,779	1,332.6	1,003.3	196.1
Okinawa	19,669	13,618	2,187	1,533.0	1,061.4	170.5
Measured against the National Figure	1.2%	1.1%	0.9%	115.0%	105.8%	86.9%

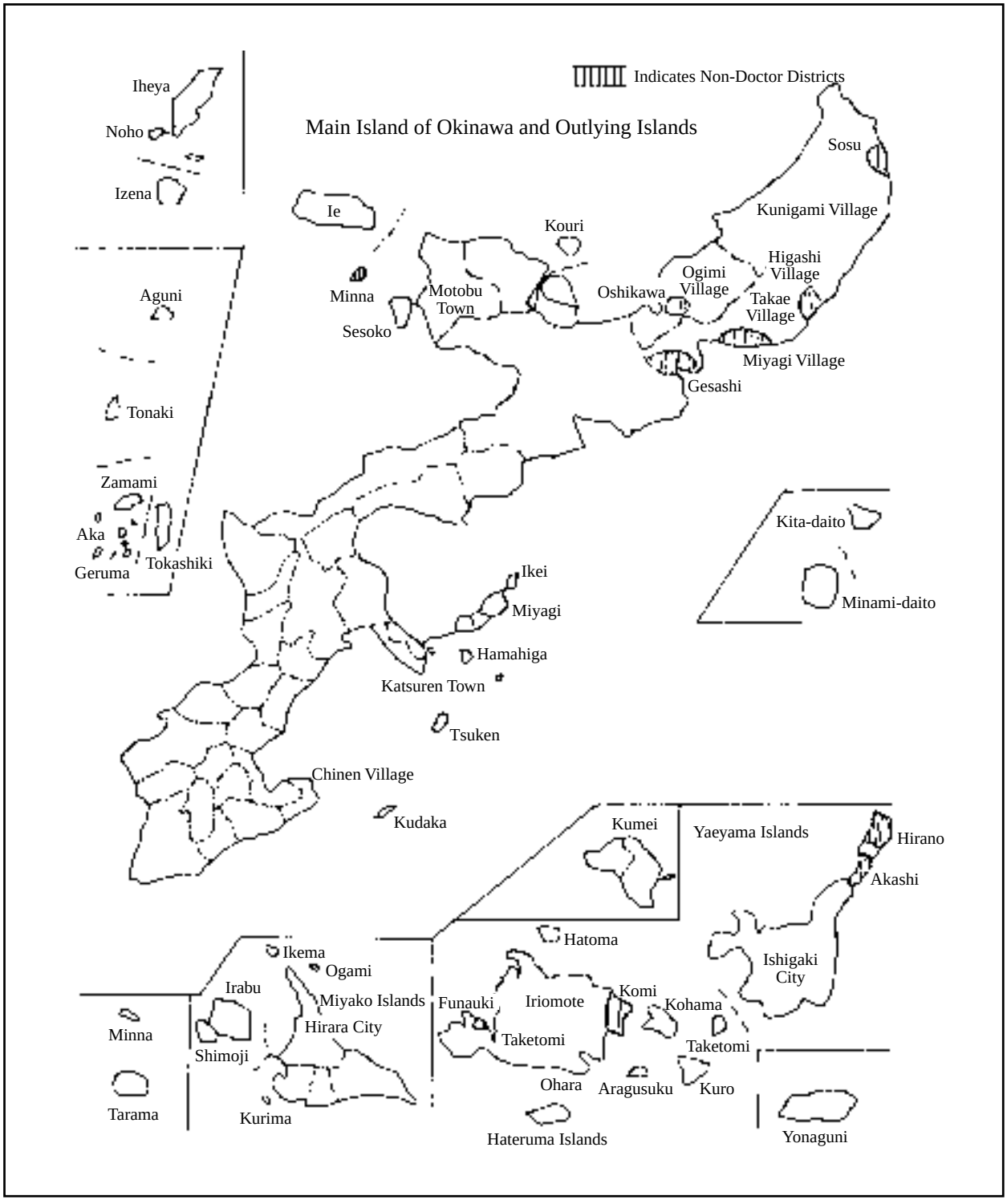
Source: Imu gaiyo [Medical Overview] Fiscal 1997, Medical Affairs Division, Department of Environmental and Health, Okinawa Prefecture.

The foregoing has compared medical care facilities in Okinawa Prefecture and the nation as a whole. Next, consideration is offered of situation in Okinawa with respect to the distribution of such facilities. The proportion of the population living in the Central-southern parts of the prefecture is 80%, and medical care facilities are also concentrated in these areas. In the Northern part and the outlying islands where depopulation is occurring, the shortage of medical care facilities and medical practitioners is a serious problem.

The Ueno village of the Miyako district is the only part where there is no hospital or clinic, but there are eight municipalities in which there are no such medical care facilities within a four km radius of inhabited areas (non-physician districts). Four towns and villages are located in the Northern part of Okinawa's main island, with the rest on outlying islands.

Also, 21% of the hospital beds are in the city of Naha, with another 45.1% accounted for by the cities of Okinawa, Gushikawa, Ginowan, and other urban are as in the Central-southern part of the prefecture. There are 29 towns and villages without hospitals.

Figure 2-4 Situation with Respect to Non-Physician Care Districts in Okinawa Prefecture



2-2-4 Overview of Administration of Health and Medical Care and Sanitation

(1) Administrative Entities

The administration of health and medical care and sanitation in Okinawa Prefecture is primarily promoted by the Okinawa Prefectural Government. Areas extending from health and medical care to sanitation and welfare are conducted by the Health and Welfare Department (formerly the Environmental Health Department; reorganized in April 1998). Issues such as red clay erosion countermeasures and pollution control are handled by the Environmental Preservation Office of the Culture and Environment Department (see Figure 2-5 for a organization chart of the Health and Welfare Department).

(2) Health and Medical Care Plans

There are several plans formulated in order to implement health and medical care policy in Okinawa Prefecture. These are 1) the overall Okinawa Prefecture Health and Medical Care Plan; 2) Okinawa Prefecture District Health and Medical Care Plans, for each medical district; and 3) Okinawa Prefecture Outlying Island and Rural Area Health and Medical Care Plans for those areas.

The first of these, the Okinawa Prefecture Health and Medical Care Plan, features general measures, and is aimed at the development of an overall health and medical care structure to allow comprehensive health and medical care services to be received. These are to be achieved by means of quantitative and qualitative enhancement of health and medical care resources, ranging from the encouragement of the health of prefectural citizens to disease prevention, treatment, and rehabilitation. The plan provides for three classes of functionality (primary, secondary, and tertiary) from primary care to advanced speciality treatment, with respective roles as follows.

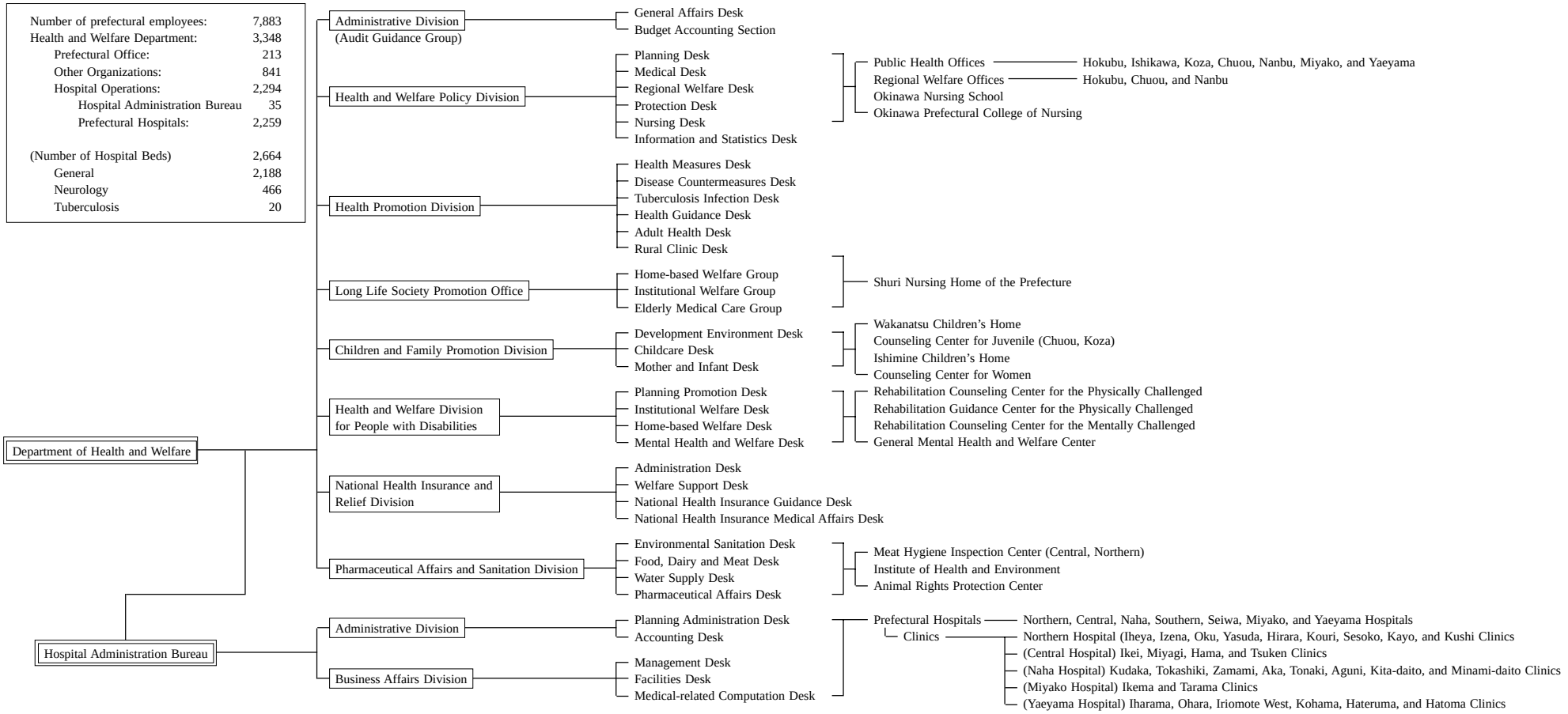
Primary medical care is handled by clinics. This provides for the securing of appropriate numbers of clinic doctors in various municipalities, while also promoting the functions of caregivers, including health education of local citizens, health instruction, and introductions to suitable medical institutions. Secondary medical care is provided through comprehensive medical services by local hospitals in each region. Finally, tertiary medical care is provided in the context of medial services requiring advanced, specialized technologies and equipment serving the prefecture as a whole, centrally provided by the University of the Ryukyus Faculty of Medicine Hospital and the Okinawa Chubu Hospital.

The respective roles of primary, secondary, and tertiary medical services are accordingly clarified, with importance placed on the strengthening of mutual linkages. Meanwhile, the University of the Ryukyus Faculty of Medicine and its affiliated hospital play a central role not only in terms of the training of doctors, medical research, and the provision of advanced medical treatment, but also via the continuing education of medical practitioners in connection with related organizations such as medical associations.

The second set of plans, the Okinawa Prefecture District Health and Medical Care Plans, is arranged for each local area based on the overall plan, and is inclusive of specific measures to be implemented

Figure 2-5 Organization Chart of the Department of Health and Welfare

(April 1, 2000)



in secondary health and medical care districts, consistent with the Prefectural Plan.

The third set of plans, the Okinawa Prefecture Outlying Island and Rural Area Health and Medical Care Plans, is aimed at the correction of regional disparities in medical care and the development of a comprehensive health and medical care structure for outlying islands and rural areas. This involves specific implementation of various measures, such as the establishment of medical care systems in non-physician districts, the securing of doctors, the qualitative improvement of health and medical care, and the reinforced linkages among health, medical care, and welfare.

Emergency medical care is another key issue for Okinawa Prefecture, and efforts to secure emergency medical care systems are primarily provided by public medical institutions. These systems are composed of 1) the initial emergency medical care system, 2) the secondary emergency medical care system, and 3) the tertiary emergency medical care system. Special note should also be made of the medical care system using helicopters and other emergency means.

The initial emergency medical care system consists of response for emergency patients at holiday and nighttime emergency clinics operated by municipalities (in some cases cooperatives) in the six emergency medical districts of the prefecture (Northern, Central, Naha, Southern, Miyako, and Yaeyama). In the Naha emergency medical district, operations are consigned to the local medical association, and an at-home standby system of duty has been adopted.

The secondary emergency medical care system centers on prefectural hospitals and other institutions in each of the emergency medical care districts, with 24 hour availability based on the implementation of rotation arrangements among groups of hospitals. Response is also available at private hospitals announcing emergency services.

The tertiary emergency medical care system is for response in cases requiring specialized, advanced treatment. A lifesaving emergency center has been set up within the Okinawa Chubu Hospital, and this facility offers 24 hour response. In addition, the University of the Ryukyus Faculty of Medicine Hospital has been providing emergency medical care since October 1998.

An emergency transport system has also been established based on the use of helicopters operated by the Ground Self-Defense Forces and the Maritime Safety Agency, and is used to transport critical emergency patients in cases where adequate response cannot be provided by remote island clinics. The system involves the use of helicopters, etc., provided with special medical staff and equipment stationed on the main island of Okinawa, Miyako, and Ishigaki, for the transport of patients to prefectural or other designated hospitals.

Keywords: Concentration of population in Central-southern areas, Depopulation and aging of remote islands and rural areas, Tourism industry, Unemployment rate, Three major adult diseases, Elderly medical expenses, Concentration of medical care facilities, Non-physician districts, Administration of health and medical care and sanitation, Health and medical care policy, Prefecture Health and Medical Care Plan, District Health and Medical Care Plans, Outlying

Island and Rural Area Health and Medical Plans, Primary, secondary, and tertiary medical care, Initial, secondary, and tertiary emergency medical care systems, Emergency transport by helicopter and other means.

2-3 Current Conditions with Respect to Medical Practitioners

2-3-1 Doctors

(1) Current Situation and Ongoing Changes

The number of doctors stood at 2,189 as of the end of 1996, representing an increase of 129, or 6.3%, over 1994. The number of doctors per 100,000 population was 170.8, or 89.1% of the national average. Although the level has not yet reached that of the nation as a whole, the degree to which efforts have been made by Okinawa Prefecture to secure doctors can be confirmed by considering the quadrupling that took place over a 24 year period, from 516 doctors in 1972 at the time of the return to 2,189 in 1996.

Viewed by region (i.e., Public Health Center domain), the number of doctors in the Southern part of the prefecture is 246.7 per 100,000 population, indicating that doctors are concentrated in the same manner as the population at large. In contrast, the per population numbers of doctors are low in areas subject to depopulation, including the Northern part of the prefecture and on outlying islands. Particularly in a prefecture such as Okinawa, composed largely of islands, the securing of doctors at clinics on outlying islands and in rural areas is a major concern.

Table 2-6 Number of Doctors by Health Center, Okinawa Prefecture

Health Center	Population	Number of doctors	Number of Doctors per 100,000 population	Population per doctor
Hokubu (Northern) Health Center	98,183	137	139.5	716.7
Ishikawa Health Center	129,560	209	161.3	619.9
Koza Health Center	300,040	360	120.0	833.4
Chuou (Central) Health Center	300,809	496	164.9	606.5
Nanbu (Southern) Health Center	350,181	864	246.7	405.3
Miyako Health Center	55,698	70	125.7	795.7
Yaeyama Health Center	47,295	53	112.1	892.4
Total	1,281,766	2,189	170.3	585.5

Note: As of the end of 1996; population estimated as of October 1, 1996.
Source: Imu gaiyo [Medical Overview] Fiscal 1997, Medical Affairs Division, Department of Environmental and Health, Okinawa Prefecture.

(2) Trends in Training

In terms of efforts in Okinawa Prefecture to train doctors, a system of nationally funded scholarships for medical students to study in mainland Japan provided major contributions for some time after the return. This system was superseded by the establishment of the Faculty of Medicine at the University of the Ryukyus in 1981, however, and this institution now plays an important role in supplying doctors for Okinawa Prefecture. The School opened with a limit of 100 students in 1981, with the first class graduating in 1987. Subsequently, there have been about 100 graduates every year.

2-3-2 Nurses, Public Health Nurses, and Midwives

(1) Current Situation and Ongoing Changes

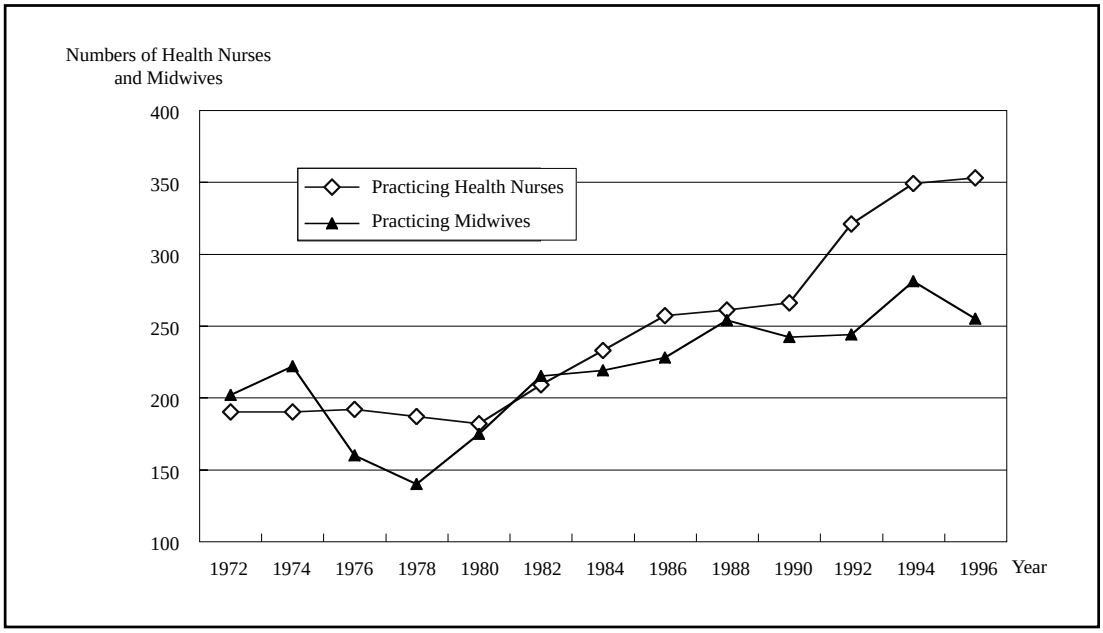
As of the end of 1996, there were registered totals of 5,863 nurses, 4,382 practical nurses, 353 health nurses, and 255 midwives. In terms of staffing per 100,000 population, the figures are 457.0 for nurses, 341.5 for practical nurses, 27.6 for health nurses, and 19.9 for midwives, representing 105.5%, 111.9%, 109.6%, and 105.9%, higher than the national averages, respectively. Clearly, as opposed to the situation with respect to doctors and medical staff, levels for the nation as a whole have been surpassed. However, there are still disparities between outlying islands and the urbanized Southern and Central areas, and the future aging-induced expansion of demand for medical care services would indicate that even the levels achieved will not long remain sufficient.

Table 2-7 Number of Nursing Staff by Health Center in Okinawa Prefecture

Health Center	Health Nurses	Male Public Health Nurses	Midwives	Nurses	Male Nurses	Practical Nurses	Male Practical Nurses	Total
Hokubu Health Center	35	0	22	413	39	318	49	876
Ishikawa Health Center	35	1	24	572	47	305	79	1,063
Koza Health Center	60	2	31	1,107	78	863	120	2,261
Chuou Health Center	65	1	72	1,219	52	875	104	2,388
Nanbu Health Center	110	1	92	1,769	148	1,274	189	3,583
Miyako Health Center	20	0	2	218	19	134	6	399
Yaeyama Health Center	23	0	12	171	11	60	6	283
Total	348	5	255	5,469	394	3,829	553	10,853

Source: Imu gaiyo [Medical Overview] Fiscal 1997, Medical Affairs Division, Department of Environmental and Health, Okinawa Prefecture.

Figure 2-6 Changes (Actual Values) in Numbers of Practicing Health Nurses and Midwives



(2) Trends in Training

As of April 1997, there were 14 programs in existence at eight institutions in Okinawa Prefecture for nursing staff training, with annual limit, 550 for nurses, 230 for practical nurses, 20 for health nurses, 20 for midwives, and 70 at the Public Health program at the University of the Ryukyus. This makes for an annual total of 890. The cumulative total number of nurses, practical nurses, health nurses, and midwives is 14,710 from 1950 through 1996 (see Appendices 2-1 and 2-2).

In addition, aiming at improvement in the quality of nurses, the Okinawa Prefectural College of Nursing opened its doors in April 1999, and this institution is anticipated to provide for the training of nursing staff with greater levels of specialist knowledge (see Appendix 2-3). In conjunction with the establishment of this new institution, the Okinawa School of Nursing will close in 2002.

2-3-3 Physical Therapists and Occupational Therapists

(1) Current Situation and Ongoing Changes

As of the end of 1997, there were 274 physical therapists and 89 occupational therapists (i.e., registered professionals). These figures both represent nearly twice those seen in 1990, and it is projected that future needs will continue to expand in conjunction with the aging of society.

(2) Trends in Training

The institution for training these professions in Okinawa Prefecture is the Okinawa Rehabilitation Welfare Institute, under the auspices of the Omoto-kai Medical Foundation. The Physical Therapy program was initiated in 1990 (20 students in that year, expanded to 40 from 1991), with the Occupational

Therapy program started up in 1993. Both of these require three years to graduation, and many graduates take up positions in hospitals and social welfare facilities in the prefecture after passing their respective national boards. From March 1993 to March 1998, the Physical Therapy program has produced 196 graduates, while the Occupational Therapy program has turned out 52.

Table 2-8 Number of Physical Therapists Trained

	Establishment	Number of Students	Years to Graduation
Physical Therapists	1990	40	3
Occupational Therapists	1993	30	3

Source: Omoto-kai Okinawa Rehabilitation Welfare Institute.

2-3-4 Diagnostic X-ray Technicians and Medical Technologists

(1) Current Situation and Ongoing Changes

There were 264 diagnostic x-ray technicians as of October 1, 1996, representing an increase of 51 (24%) over 1990, while there were 504 medical technologists, for an increase of 99 (also 24%) over the same period.[1]

(2) Trends in Training

While it is possible to become qualified to take the medical technologist examination through the Public Health program at the University of the Ryukyus, the majority of those working at medical institutions in Okinawa Prefecture are persons who attended training facilities, junior colleges, or departments of pharmacology, public health, and sanitation etc. in mainland Japan and subsequently passed their national examinations. There are currently no institutions in Okinawa for the training of diagnostic x-ray technicians, and the prefecture is dependent upon training facilities, junior colleges, etc.

[1] Numbers of diagnostic x-ray technicians and medical technologists are numbers of persons working at hospitals.

Appendix 2-1 Nursing Staff Training Institutions in Okinawa Prefecture

(as of April 1, 1996)

Type	Number of Programs	Number of Students per Class	Total Number of Students	Remarks
Health Nursing Program	1	20	20	Okinawa Nursing School Health Nursing Program (closing in 2002)
Midwifery Program	1	20	20	Okinawa Nursing School Midwifery Program (closing in 2002)
Three-year Nursing Program	1	180	540	Okinawa Nursing School
	1	100	300	Okinawa Nursing Vocational School
	1	50	150	Hokubu Nursing School
Two-year Nursing Program	1	40	80	Urasoe Nursing School, Program No. 1
	1	80	240	Urasoe Nursing School, Program No. 2 (evening class)
	1	50	150	Naha Nursing Vocational School (evening class)
	1	50	150	Hokubu Nursing School (evening class)
Practical Nursing Program	1	40	80	Nursing School Attached to National Airakuen Sanatorium (closing)
	1	150	300	Naha Nursing Vocational School
(Practical Nursing Program) High School Health Nursing Program	1	40	120	Naha High School Health Nursing Program
(Public Health, Midwifery, and Nursing Programs) University	2	70	280	University of the Ryukyus Faculty of Medicine Public Health Program
Totals	14	890	2,430	

Note: Evening class course requires three years to graduation.

Source: Imu gaiyo [Medical Overview] Fiscal 1997, Medical Affairs Division, Department of Environmental and Health, Okinawa Prefecture.

Appendix 2-2 Nursing Staff Trainees in Okinawa Prefecture

(as of the end of April 1997)

(Unit: Persons)

Academic Year / Type	1950-79	80	81	82	83	84	85	86	87	88
Public Health Nurses (including male)	612	35	31	31	40	32	33	26	24	28
Midwives	190	22	23	26	26	20	16	21	22	24
Nurses (including male)	2,501	161	151	167	197	230	249	283	285	274
Practical Nurses (including male)	1,672	164	187	188	193	184	174	177	177	181
Totals	4,975	382	392	412	456	466	472	507	508	507

Academic Year / Type	89	90	91	92	93	94	95	96	97	Cumulative Totals
Public Health Nurses (including male)	22	22	20	20	20	20	22	22	22	1,082
Midwives	22	18	16	21	19	20	20	20	19	565
Nurses (including male)	284	300	287	307	291	319	381	608	631	7,906
Practical Nurses (including male)	183	186	192	202	203	194	230	242	228	5,157
Totals	511	526	515	550	533	553	653	892	900	14,710

Source: Imu gaiyo [Medical Overview] Fiscal 1997, Medical Affairs Division, Department of Environmental and Health, Okinawa Prefecture.

Appendix 2-3 Overview of Okinawa Prefectural College of Nursing

(1) Name:	Okinawa Prefectural College of Nursing
(2) Location:	1-24-1 Yogi, Naha City
(3) Departments and Programs:	Nursing Department, Nursing Program
(4) Total Number of Students:	320 (80 new students each year)
(5) Degree Conferred:	Bachelors degree in nursing
(6) Qualification:	• National examinations can be taken for nursing, health nursing, or midwifery (selection is optional) after graduation • Upon certification as a health nurse, second class nurse teacher license can be obtained by application.
(7) Opening:	April 1999
(8) Campus Area:	20,268 square meters
(9) Total enclosed floorspace:	15,888 square meters - Education and Administration Wing - Research Wing - Library - Gymnasium

Source: Welfare and Health Policy Division, Okinawa Prefecture

• Status of Entrants in 1999

Number of Entrants: 80 (60 by general entrance exam, 20 by special selection)
(Special selection consisted of 16 general entrants, two recommendations of employed persons, and two recommendations of local entrants)
Okinawa Prefecture: 69 (7 males, 62 females)
Other: 11 (1 male, 10 females)
Total Number of Examinees: 792

• Status of Instructors (Full-time)

	Professors	Associate Professors	Instructors
Basic Courses	2	1	2
Specialist Support Courses	2 (3)	0	3
Specialist Courses	5 (8)	1 (4)	3 (7)
Totals	9 (13)	2 (5)	8 (12)

Note: Numbers in parentheses are planned staff allocations by 2002

• Degrees, Certifications, etc.

A Bachelor's Degree (Nursing) is conferred upon graduation.

- National boards can be sat for in public health nursing or nursing
- National boards can be sat for in midwifery (optional selection)
- Second class nurse teacher license can be obtained

• Post-graduation Opportunities

Opportunities after graduation include those at hospitals, health centers, clinics, municipal governments, facilities for the care of the elderly, social welfare facilities, nursing dispatch stations, home nursing care support centers, administrative institutions, private firms, graduate schools, research and educational institutions, etc.

• Total Number of Students

320 (80 per grade)

3. Distinctive Local Health Care Activities in Okinawa

3-1 Impact of U.S. Sovereignty on Local Health Care

3-1-1 Health Care During U.S. Sovereignty

Okinawa Prefecture lost a large number of its medical practitioners during the Second World War. Immediately after the war, there were only 64 surviving doctors in the entire prefecture; five years later in 1950, there were still only 131. Almost no hospitals, clinics or other medical facilities remained. This extreme shortage of medical facilities and personnel continued for several years after the war.

As it will be described later, the U.S. Military Government (after 1950, the U.S. Civil Administration of the Ryukyus [USCAR]) enacted a large number of medical policies designed to improve what were deplorable medical conditions. During the initial years, however, Okinawa was forced to combat tuberculosis, filaria, and malaria amidst this shortage of medical resources.

The first two hospitals after the war were constructed at Ginoza and Ishikawa, and served as the lead hospitals for Okinawa's clinics. Two more hospitals were subsequently constructed at Itoman and Nago, bringing the total to four. At roughly the same time as the establishment of the Okinawa civil government, the Okinawa Chubu Hospital (generally known as Koza Chubu Hospital) opened its doors as a general hospital offering treatment in a wide range of medical specialties. This facility became the focal point for medical care in Okinawa.

Table 3-1 Medical Personnel in Okinawa

	1943	1946
Physicians	163	64
Dentists	69	19
Medical servicemen	-	58
Dental servicemen	-	22
Pharmacists	24	4
Licensed nurses	113	191
Nurse trainees	-	321
Midwives	258	150
Acupuncturists/moxibustionists	66	-
Masseurs	5	-

Notes 1. Figures for 1943 are from the Okinawa Prefecture Health Statistics.
2. Figures for April 1948 are from the Okinawan Islands Government Welfare Department Health Statistics.
(Editor's note: Figures for medical servicemen, dental servicemen, nurses and nurse trainees are from "Extraordinary Employment Measures" taken by the U.S. Military Administration.)

Source: "Choju no Ashiato," 1995, Okinawa Prefecture
Medical organizations under the U.S. military administration
(U.S. Military Government Ordnance No. 110, January 28, 1946)

3-1-2 Health and Medical Care Administration During U.S. Sovereignty

Okinawa was a Second World War battleground, and its social infrastructure, industry, and housing were all reduced to ashes by the conflict. In April 1945, U.S. Naval Government Proclamation No. 1 (the Nimitz Proclamation) brought Okinawa under U.S. rule, and the prefecture remained under U.S. sovereignty for 27 years until it was returned to Japan in 1972. Medical care policy during this time was initially administered by a series of proclamations and orders. In the subsequent years, the military government enacted a number of policies and programs designed to train medical personnel and build and enhance health care and medical facilities. These policies and programs form the foundation for the excellent environment in terms of health, medical care, and sanitation enjoyed by Okinawa today, an environment that is adapted to local conditions and requirements. Below is an outline of the major medical programs and policies enacted it by the U.S. Military Government during the 27-year period until Okinawa was returned to Japan.

(1) Government-Administered Medical Care

Following the war, Okinawa suffered from severe shortages of both medical facilities and medical personnel. Immediately after the war, the military government enacted a “government-administered medical care policy” that prohibited physicians from opening their own practices. This was a response to emergency conditions, and it required physicians to work at local hospitals and clinics as public servants. The policy continued until 1951, when a system of individual medical practice was enacted and permission given for physicians to open their own practices in designated areas. Pharmaceuticals and sanitary supplies were also rationed by the military.

(2) Medical Servicemen

During the shortage of doctors after the war, “health centers” from the former Japanese army were allowed to engage in medical activities as “medical assistants.” They were later given special licenses to function as physicians (“medical servicemen”), although there were restrictions on the procedures in which there were allowed to engage. These medical servicemen made substantial contributions to local health care.

(3) Scholarship Program

The military government emphasized the need to train physicians in order to overcome shortages, and in 1949 enacted the “Contract Medical Student Study Abroad Program.” This program evolved into the “Publically-funded Medical Student Study Abroad Program” in 1953 (funded by the government of Japan from 1955). Until its termination in 1986, this series of program sent specific numbers of medical students to mainland Japan each year. Students on these programs subsequently made significant contributions as leaders in local health care in Okinawa Prefecture.

(4) Establishment of Health Centers

The military government established large numbers of Public Health Centers to serve local districts as part of its health care and sanitation administration. These Public Health Centers played a major role in health care and sanitation supervision. They resulted in the eradication of malaria, filaria, and other diseases that had long undermined the health of Okinawa's people and impeded industrial development. Okinawa's tuberculosis rate also declined to the national average. Improvements in health care and sanitation have made Okinawa the greatest longevity prefecture in Japan.

The Public Health Centers were also central in food sanitation monitoring. The main roles in sanitation monitoring were played by veterinarians and pharmacists, but during the initial years, sanitation monitors did double duty as both food sanitation monitors and environmental sanitation monitors.

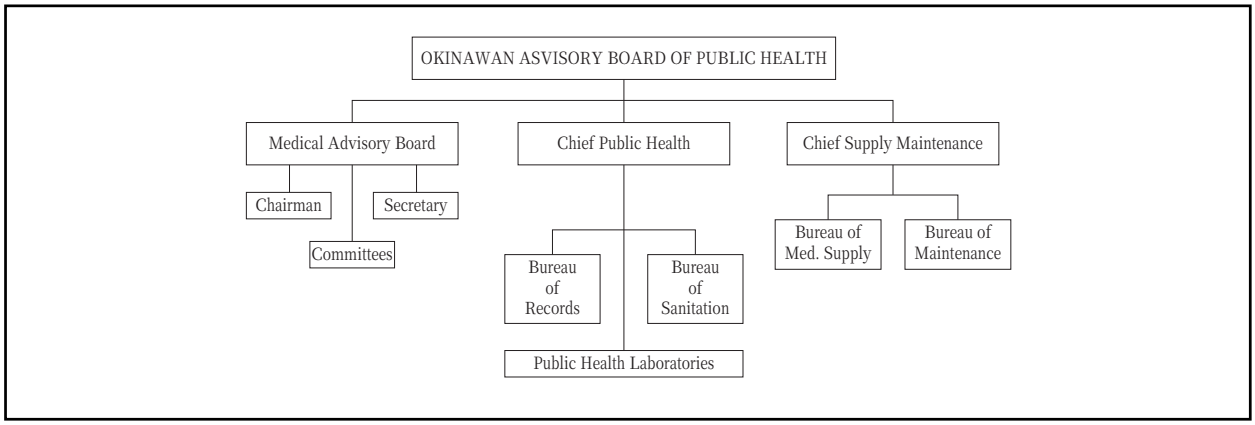
(5) Training for Public Health Nurses

As it established Health Centers, the military government also embarked on the training of co-medicals. Particular importance was attached to the training of public health nurses, who served as the mainstays of the local health care programs of the health centers and played important roles in the prevention and treatment of tuberculosis, one of the most serious problems of the time.

(6) Training of Medical Technologists

The U.S. Military Government trained the medical technologists who are essential to local health care and sanitation programs. Medical technologists conduct immunological tests for contagions and parasites. The Central Health Laboratory had primary responsibility for their training, providing a steady supply of important personnel for prefectural health care ever since it graduated its first class of ten in 1946.

Figure 3-1 Organization Chart of the U.S. Naval Government's Health Administration



Source: Choju no Ashiato [Record of Longevity]. Okinawa Prefecture, 1995.

Keywords: U.S. sovereignty, U.S. Military Government, Nimitz Proclamation, U.S. Civil Administration of the Ryukyus (USCAR), Proclamations and orders, Government-administered medical care, Medical servicemen, Medical students study mainland Japan program, Health Center, Public Health nurses, Medical technologists

3-2 Medical Servicemen and Local Health Care Activities

3-2-1 Background and History

As mentioned before, Okinawa experienced severe shortages of medical services after the war, and in April 1945, the U.S. Military Government issued Proclamation No. 9, “Public Health and Sanitation,” to provide a means of overcoming the shortage of physicians. The proclamation defined “other health care workers” in addition to licensed physicians and dentists, and authorized them to engage in medical activities as “assistant doctors.” This category included medical school dropouts, people who had served as health centers in the military, physicians’ assistants, pharmacist trainees (“yacchiku”) who had worked under physicians, and others with medical experience. In April 1946, the Okinawa Civil Administration, which had been established as the civil administration organization, issued the “medical service” order that obligated assistant doctors to work at local clinics, local hospitals, chubu hospitals, or special hospitals.

Proclamation Nos. 42 and 43, issued by the U.S. Civil Administration of the Ryukyus (USCAR) in May 1951, abolished the assistant dentist and assistant doctor systems and in their place created new categories designated as medical serviceman and dental serviceman.

Prior to the proclamations of April 1951, the qualifications of medical and dental servicemen were reviewed, and three rounds of “medical serviceman qualifying examinations” were subsequently held. The examinations resulted in 126 certified medical servicemen and 35 certified dental servicemen.

These servicemen performed valuable services of outlying islands and remote villages during the 27 years of U.S. rule, but the return of Okinawa to Japan in 1972 brought to changes the system. Under Japanese law, they were not qualified to practice medicine, but fortunately the Law Concerning Special Measures Related to the Reversion of Okinawa provided for transitional measures when Okinawa returned to Japanese sovereignty. Article 100 of the law allowed servicemen to continue to practice medicine.

3-2-2 Description of Program

The 1951 proclamation defined medical servicemen as persons who met the following qualifications:

(1) At least one year of training under the direct supervision and guidance of a qualified physician,
(2) Training in first-aid, nursing of the sick, diagnosis of minor ailments, simple surgical procedures, and administration and prescription of simple pharmaceuticals and drugs,
(3) Service as an assistant doctor for three continuous years by the day on which the proclamation was issued,
(4) To work under the supervision of a fully qualified physician or health center director after the issuing of the proclamation.

This proclamation established the category and qualification of “medical serviceman.”

There are job categories similar to Okinawa’s medical serviceman in other countries. They are primarily found in developing countries that lack physicians, where “clinical officers” make up for the shortage. The United States and other developed countries also use similar personnel in local health care. In the United States, they go by the title “assistant medical officer,” and they contribute to the alleviation of physician shortages in their areas.

3-2-3 Medical Serviceman Trends

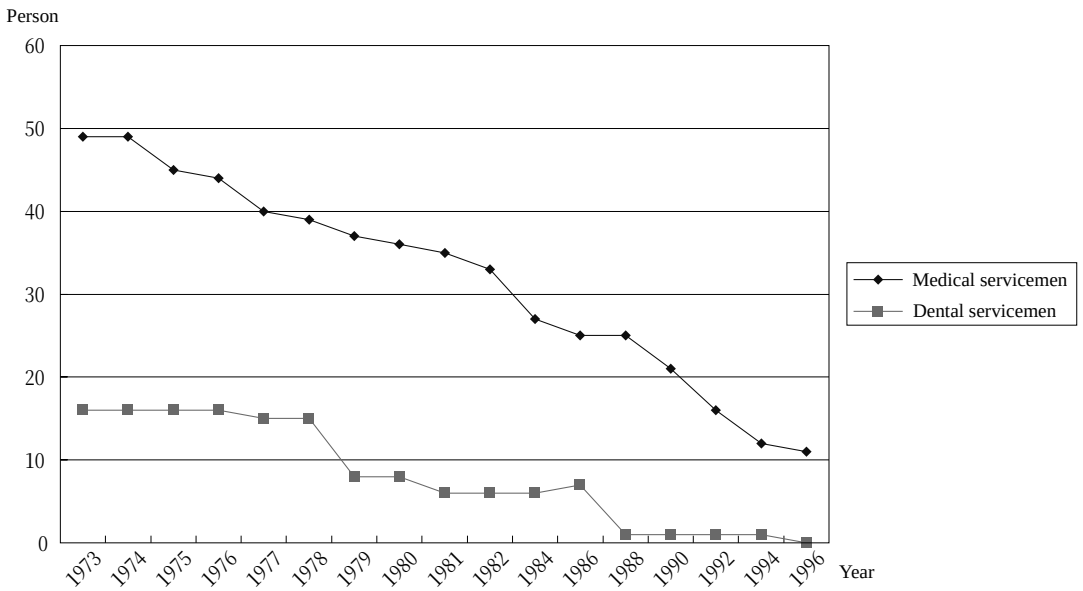
Qualification tests were not performed after 1952; the number of medical servicemen peaked at this time and gradually dwindled due to death etc. The regional breakdown showed 74 medical servicemen on the Okinawa islands (61 on Okinawa proper, 13 on the surrounding islands), three on the Miyako islands, 19 on the Yaeyama islands, and 30 on the Amami islands (now Oshima-gun in Kagoshima Prefecture). There were also 33 dental servicemen on the Okinawa Islands and two on the Amami islands.

When Okinawa returned to Japanese sovereignty, there were 49 medical servicemen and 16 dental servicemen. Of these numbers, 10 worked at prefectural clinics (independent), four at government facilities (leprosy treatment centers, prisons, reform schools), 33 functioned as local independent practioners, and two worked for doctors with a independent practices. Among the dental servicemen, 11 were local independent practioners and five worked for dentists with independent practices.

In 1977, five years after return to Japanese sovereignty, prefectural hospitals had 29 clinics located on remote islands and in remote villages, but only nine of these had physicians assigned to them. Medical servicemen worked without direct supervision at eight, and the rest were unable to attract physicians or medical servicemen and therefore closed or idle. This is an indication of how essential medical servicemen were to health care in remote areas.

In 1996, there were 11 medical servicemen remaining, and no dental servicemen. They continued to work in remote areas in spite of advanced age. This number is equivalent to 7% of the servicemen that began in 1951. The vast majority had already retired.

Figure 3-2 Medical Servicemen and Dental Servicemen (after reversion to Japan)



Source: "Medical Overview" Medical Division, Department of Environment and Health, Okinawa Prefecture

Box 1: Contributions of Medical Servicemen to Medical Care for Remote Islands and Villages

Mr. Kazuo Nakazato was a medical serviceman on remote islands for 42 years. His experiences illustrate the activities in which medical servicemen were engaged.

Mr. Nakazato was a sergeant during the war and served as a junior medical officer. He decided to become a medical serviceman after nursing people injured when unexploded bombs on the island of Agushikojima exploded. He passed the certification test in 1951 and was stationed on several remote islands during his career, including Agushikojima. By the time of his final assignment to Zamami Island, he had spent 21 years providing medical care to remote islands.

Medical supplies were short during U.S. rule, and Mr. Nakazato had to make frequent trips from his remote island station to hospitals in Naha to pick up drugs, gauze and bandages. He would borrow a motorized tricycle to drive himself to the pickups, and then load the supplies back on his boat to return. Even still, the equipment and supplies were inadequate and he had to purchase syringes and surgical forceps with his own funds.

As a medical serviceman, there were restrictions on the treatments that Mr. Nakazato could perform. He was, for example, barred from taking X-rays or using surgical procedures to treat appendicitis. There were many times that he wished he had a physician's license. Legally, he could not provide dental treatment, but on islands with no dentist he secretly performed extractions.

The most trying times were when emergency patients came in. One of the most important functions of the medical serviceman was to decide whether patients he was unable to treat himself should be sent to hospitals with the proper facilities. Initially, the U.S. military had to be asked to do this, and it took more than 3 hours before a helicopter could arrive. Times have since been shortened because transportation is performed by the Japanese Self-Defense Forces today and there are better emergency medical systems in place, which has greatly ease the mental burdens on medical servicemen assigned to remote islands. On average, emergency transportation has to be requested 4-5 times a year.

Zamami, where Mr. Nakazato was stationed, did not have telephones 20 years ago. In fact, it only had two

motorcycles, one for the health center and one for the village government. Even the motorcycle was of little use at night time or during rain because the roads were too treacherous.

Recently, there has been an increase in the number of tourists to Zamami Village who end up as patients. The village only has a population of 800, but sees roughly 60,000 tourists a year. Many, not understanding that the sunlight here is much more intense, end up being carried into the health center suffering from sunstroke.

Keywords: U.S. Military Government, Assistant doctor, USCAR, Medical servicemen, Dental servicemen, Assistant medical officers

REFERENCES

<Japanese>

Department of Environment and Health, Medical Office, Okinawa Prefecture (1997) *Imugaiyo [Medical Overview]*.

Environmental Hygiene Department, Okinawa Prefecture (1977) *Okinawa hoken gyosei no gaiyo [Overview of Environmental and Health Administration]*.

Foundation of Social Development for Senior Citizens (1997) *Okinawa chojyu sogo chosa houkokusho [All-around Research Report on Okinawa's Longevity]*.

Okinawa Medical Serviceman Association (1986) *Okinawa to kaiho-Okinawa kaiho seido 35 shunen kinen shi [Okinwa and Medical Serviceman-Okinawa Medical Serviceman System 35th Anniversary]*.

Ibid. (1991) *Okinawa kaiho shi-Okinawa kaiho seido 40 shunen kinen shi [History of Medical Serviceman in Okinawa-Okinawa Medical Serviceman System 40th Anniversary]*.

Okinawa Nanbu Health Center (1998) *Zamami -seishin hoken fukushi katsuo 20 shunen kinen shi-[Zamami-Mental Health Welfare Activities 20th Anniversary]*.

Okinawa Prefectural Statistics Association (1998) *Okinawa ken tokei nenkan [Annual Okinawa Statistics]*.

Okinawa Prefecture (1994) *Okinawa ken hoken iryo keikaku [Okinawa Health and Medical Plan]*.

Public Welfare Statistics Association (1997) *Kokumin eisei no doko [The Trend of National Hygiene]*.

Social Hygiene and Welfare Association (1985) *Okinawa ken iryo kenko suijyun [The Standard of Medical and Health in Okinawa]*.

3-3 Activities of Health Nurses *[1]

3-3-1 Health Nurse Training

Chieko Ohmine
Former President, Okinawa Prefectural Nursing College

(1) Introduction

Nurses are key players in clinical care, but Okinawa lost large numbers of nurses, training facilities, and nursing supervisors during the Second World War. By the end of the war, people were suffering not only from malnutrition and extreme fatigue, but also from rampant tuberculosis, diarrhea, enteritis, and other diseases. Public health and sanitation levels had deteriorated markedly, and it was urgent that steps be taken to deal with these problems.

Clinical nurse training began with the establishment of a three-year nurse training course at the same time as the opening of the first postwar hospitals. There were virtually no teachers, textbooks, or supplies; training was primarily on the job, and was characterized by the full cooperation of physicians.

In 1951, as lives began to return to some semblance of normality, preparations got under way for the opening of health centers to allow public health activities to begin, and this made it urgent that personnel be recruited to work as public health nurses in this new area. Below is an outline of the teaching and training programs that were enacted as part of the nurse recruitment strategy.

(2) Health Nurse Training: Courses Adjusted to Social Conditions

Due to the nature of their activities, health nurses working in the area of public health require further training in addition to ordinary nurse training. The first standards, set by the U.S. Civil Administration of the Ryukyus (USCAR) in 1951, required public health nurses to have a minimum of six months' training, but conditions at the time made it virtually impossible to provide the training and education required. Health nurse training therefore began with lectures, followed by systematic supplementary education designed to enable candidates to qualify as public health nurses. Training was a step-by-step process.

At the time health centers were first opening, "public health nurse" was a new area of nursing, and the role of the public health nurse in the local community was not always sufficiently understood. Recruiting students to lectures began with explanations from qualified nurses and nurses working in hospitals. Candidates found suitable were appointed as health center workers and provided with salaries so that they had a means of living while studying.

The training required five months, three months of theory in the form of intensive lectures, followed

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[1] Regarding the content of activities by health nurses, see Appendix "The Public Health Nurse Manual".

by eight weeks (480 hours) of practical training at health centers. The course consisted of lectures on the principles of public health nursing and other professional topics. The 15 topics in the course required a total of 512 classroom hours. Training was administered by the health center at which the student worked and consisted of practical activities in individual and group guidance, for example, home visits and clinic service. Nursing activities took place in extremely impoverished communities and had to be adapted to living standards. This entailed many innovations in making use of objects commonly found in the households of the time.

Lectures were provided American nurse trainers from the USCAR, and nurses who had completed training previously at the National Public Health Institute. After training, students served a six month internship, and where then licensed as public health nurses if found acceptable. A total of five lecture series were held in parallel to the opening of health centers. These courses trained 120 public health nurses, and the availability of these nurses enabled health centers to operate smoothly.

(3) Integration of Training at the Public Health Nursing School and the Health Centers

A new promulgation in 1956 established an independent Public Health Nursing School as a training institution. Qualified nurses received a one-year extension on their recertification if they attended the school. Course instructors were required to have completed training as well as additional teacher training at the university level. These requirements enhanced and strengthened the education offered by the school.

The school made active use of nursing administrators, nursing supervisors from the Public Health Centers, and public health nurses themselves in course work on public health nursing. This ability to draw on issues found in local communities and health nursing administration as educational topics enabled the school to provide more practically-oriented training. Those responsible for the nursing departments at Public Health Centers also had a clear idea of the training being received by nursing students, enabling them to provide more active support as a part of their responsibilities, which further helped to establish quality training. Internships at Public Health Centers focused on concrete, practical supervision in a one-on-one relationship with the public health nurse responsible for the local community. Cooperation with health centers and clinics is essential if nurses are to gain the ability to apply their theoretical knowledge in practical situations. Indeed, the importance of practical training in nursing education is one of the reasons why nursing is referred to as “the practical science.”

The health-care nursing curriculum covered everything from general community assessment and methodologies for drafting health care plans, to health education and home visit instruction, family support group health instruction and consultation, collaboration with related agencies and officials, and local organization building. Related coursework included epidemiology, health statistics, and other health and welfare-related subjects, giving students a global perspective on local nursing. Educational methods were distinguished by student-led group work in large numbers of seminars. Students were encouraged to discuss and debate problems while searching for solutions.

From the time the first offices were established, health nursing policy provided for systematic and ongoing training, including training programs for supervisors and managers in addition to those for public health nurses. Instructors were graduates of special training courses at institutions on par with university graduate schools. Senior instructors were drawn from persons with experience in nursing management and health care nursing administration.

Okinawa Prefecture is made up of a large number of inhabited islands. As soon as they graduated, public health nurses were sent off to practice on their own in remote areas and were therefore required to have both practical skills and the self-discipline to carry out work plans. Achieving this required a unified approach involving nursing administration, schools, and health centers. Solid, organic ties between the relevant institutions and people enabled Okinawa to develop a tradition of excellent nursing education suited to the needs of local communities. As a result, graduates could go with confidence wherever there were assigned and deliver quality nursing care services to the local community.

(4) Standardizing of In-Service Training and Continuing Education Services

Public health nurses are assigned either to municipalities or to health centers. In both cases, their work is grounded in local health assessments, and community needs provide the rationale and framework for all other activities. Nursing care activities are deeply related to public health policies, and because of this, public health nurses require ongoing in-service training to enable them to meet current requirements and needs. Public health nurses also require ongoing self-improvement and educational efforts; this is a professional job that serves people with differing health levels, differing health needs, and differing values. In-service education takes the form of supervisory visits by nursing department heads, regular meetings, sessions, and research presentations.

Regular meetings of health centers in departments:

Public health nurses are stationed in local communities and areas, but gather once a month at the health center for regular meetings. During these meetings, activities are coordinated, study and training sessions are held on local issues and problems, and information is shared and communicated.

Public health nurse planning sessions:

Once a year, the prefectural Public Health Administration gathers public health nurses. The board of nursing section heads discusses and decides the concepts and proceedings of the session by taking the requests and the recommendation from public health nurses.

Public health nurse research presentations:

Once a year, the prefectural Public Health Administration gathers all public health nurses together for a meeting. During this meeting, local health centers coordinate research paper presentations. This meeting provides for systematic, ongoing training, and research is geared to current needs and

requirements. It has been effective in standardizing the level of public health nursing services delivered to all communities in the prefecture.

Keywords: Clinical nurse training, Public health nurses, Establishment of Public Health Centers, U.S. nursing instructors, National Institute of Public Health, Public Health Nursing School, Practical training, One-on-one training, Supervisor/manager training, Regional health assessment, In-service education, On-site training, Regular meetings, Public health nurse planning sessions, Public health nurse research presentation

3-3-2 Stationing of Public Health Nurses

(1) Stationing of Public Health Nurses in Local Communities

Stationing public health nurses in local communities ensures community health centers of personnel and enables community-centered health care activities to be delivered fairly and equitably to all residents. As soon as Public Health Centers began to be established, American instructors began to provide instruction in public healthcare. American instructors were used because of the administrative separation between Okinawa and mainland Japan. At the time, health care institutions and staff were in short supply, and the from the very beginning, Public Health Centers were charged with managing and improving the health of residents in remote areas and on small islands where there were few opportunities to benefit from health and medical services. This required efforts to enhance and reinforce the stationing of public health nurses right from the time the first health centers opened.

Regular meetings for the heads of nursing departments sponsored by the prefectural Public Health Administration helped administrators manage nurses stationed in outlying communities and standardize nursing operations and management. Often these meetings involved the participation of educators, and the result of educator involvement was to standardize local management, operations management, recording practices, and supervision standards, as well as the forms and criteria applied to the solution of problems confronting individual Public Health Centers. Public health nursing operational standards were drafted to better ensure that operations were conducted appropriately and that regional differences were minimized.

The most important factor in the process of creating the on-site nursing program, training nurses, and establishing and developing the program was the recruitment of leaders respected for both their management abilities and their personal qualities. Public health nurses stationed on remote islands are isolated and without support, so managers must pay particular attention to follow-up.

The inhabited islands of Okinawa are scattered across a broad stretch of ocean, and most have fragile economic and financial bases, posing particular hurdles for them if they had to attract public health nurses on their own. The system of stationing of nurses on these islands has been given high

marks for its ability to provide equal access to quality nursing care. Public health nurses, because they are employed by Public Health Centers, are able to make effective use of the other human resources at the office—doctors, nutritionists, medical technologists etc.—and to deliver more comprehensive nursing services as a result. In the 45 years since the system began, public health nurses have been stationed in 72 communities (1996) and their numbers have grown to 122. They have made, and continue to make, invaluable contributions to the improvement of public health in Okinawa.

(2) Organization and Assignment

Each Public Health Center has a director, a General Affairs Section, Preventive Medicine Section, Sanitation Section, and Nursing Section. The head of the Nursing Section oversees all nurses, both those stationed at the health center and those stationed in outlying communities. Nurses stationed in outlying communities have offices in the local town hall or similar facility, working in coordination with the municipal government and in cooperation with local residents.

When the system first began, nurses were stationed in their home areas because it was easier for them to understand local conditions, even where transportation conditions were poor. However, nursing assignments were later brought under the authority of the Nursing Desk of the Prevention Section, Environment and Health Department because of the large differences among the more than 50 municipalities involved (including many remote areas and islands) and out of consideration for the fairness of assignments. Today, all public health nurses are rotated, subject to a number of adjustments and considerations, and all gain experience serving on remote islands.

Nurse rotations are generally every five-six years on the main island, two-three years on remote islands. The head of the Nursing section is present when assignments are transferred because long-term, appropriate administration of projects has a marked influence on the improvement of public health.

(3) Work Management and Supervision

Public health nurses stationed in outlying areas are obligated to perform their duties in a disciplined fashion and in accordance with the Prefectural Employee Work Rules and Document Management Rules. They manage their own daily working schedules, and submit a work diary to the health center each month. Nurses must also have prior approval from the department head for business travel and days off, and must file written reports afterwards. Work is managed in the form of daily activity diaries, daily reports, monthly reports, and annual reports.

Activities covered in reports include group and individual instruction, specific categories of activities (mother and child, adult, psychological, infectious disease etc.), methods (health education, health consulting etc.), working hours, and the like. Reports are checked and analyzed against goals in performance evaluations. Nurses are also required to compile lists of activities performed in their districts for evaluations of the performance of the health center as a whole and use in the creation of the working plan for the next year.

The “Public Health Nurse Handbook” provides basic guidelines for district management and health activities by nurses. A copy is found in each local office.

The Handbook is divided into five sections: 1) administration, 2) legal, 3) activities, 4) supervision, and 5) reference materials.

1) The administration section contains descriptions of the administrative organizations and mechanisms of the Environment and Health Department, organization of the Public Health Center, descriptions of public health nurse stationing, community nursing, and work rules etc..
2) The legal section contains the Health Center Law, Public Health Nurse and Midwife Law and other laws related to health care for mothers and children, and for sufferers of tuberculosis, psychological ailments, and geriatric conditions.
3) The activities section contains guidelines for nursing activities, local annual activity plan formulation, local health profiling, nursing records, activity reports, and procedures performed by a public health nurses.
4) The supervision section contains the key points in health care supervision for mothers and children, adults and for sufferers of psychological conditions, and tuberculosis, as well as guidelines on community organization building.
5) The reference material section contains a list of relevant facilities and information on medical costs and other information pertinent to nursing activities.

Summary

- Supervisors made an effort to recruit appropriate personnel as public health nurses when the new system was introduced.
- Supervisor training plans are required before-site training can be provided to support personnel.
- It is important to modify educational programs so that they are better suited to local public health needs and conditions.
- Supplementary education is required for standards to be met and activities to keep pace with evolving social conditions.
- Practical, in-service training is required alongside theoretical education.
- Most important of all, it is essential that administration, education and activities be integrated, that constant contact and coordination be maintained, and that goals and results be increased and improved.

Keywords: Public health nurse stationing, Public health nurse working standards, Work management, supervision, Public Health Nurse Handbook

Box 2: Perceptive Public Health Nurse Saves a Workman

S was a young public health nurse who was stationed on a remote island without a physician right after she graduated. One day, word came in that a mainland man in his fifties working at a construction site was vomiting blood. S quickly arranged for an emergency helicopter lift and asked the N Prefectural Hospital to provide instructions on emergency aid. Okinawa had already returned to Japanese rule by this time, but the telephone system was still not automated and she received her instructions over the crackle and noise of a wireless telephone. Though the connection was bad, S continued to make frequent reports on the patient's condition until the helicopter arrived. She then joined the patient in the helicopter, taking him and her records to N Hospital, where the patient was saved. Doctors discovered that he suffered from a laceration of the esophagus orgullet varix.

The physician in charge was impressed with S's performance: "There was no physician on the island, and it was very difficult to give instructions over the noisy wireless telephone. I had to place my full faith in the reports of the nurse and base my decisions on what she told me. I was able to issue instructions because the nurse gave me detailed observations. The records she brought with her were accurate, and in this case, it was the perception and the quick action of the nurse that saved the patient's life." S immediately did return to the island, where she heard reports on the patient over the crackle and pop of the phone line.

(Circa 1976)

(Nakazato)

Box 3: The Midwife and Public Health Nurse "T"

Public health nurse T had just graduated and was undergoing training in obstetrics before being sent to a remote island that lacked doctors and midwives. On remote islands without adequate transportation, medical institutions, and economic means, midwifing was performed by a local woman, most of whom had no special training. Public health nurses present at the birth and could take care of sanitary concerns, disinfecting the room and particularly the blades and ligatures used to cut the umbilical cord, and they could also provide help for the local midwife in ensuring that the birth took place safely. After a while, the local woman told Nurse T to "watch the birth closely because you're taking over next time." The first time she assisted a birth, Nurse T was so overwhelmed by the sound of the baby's crying, that both she and the local midwife, who had been observing from the sidelines, shed tears of joy.

The nurse endeavored to maintain friendly communications with the local midwife on a day-to-day basis, and this helped to cement their working relationship.

(Circa 1963)

(Nakazato)

3-4 Mother and Child Health Measures[1]

Sachiko Nakazato
Professor, Okinawa Prefectural College of Nursing

Kiyoko Oshiro
Chief, Health and Welfare Section,
Chuou Health Center, Okinawa Prefecture

Yoshiko Shimoji
Manager, Health and Welfare Section,
Chuou Health Center, Okinawa Prefecture

Although known as "health nurses" since the reversion of Okinawa to Japan (as well as in the prewar period), these professionals were called "public hygiene nurses" during the postwar period leading up to reversion, and were fondly referred in Japanese to by local residents as something on the order of "pub-nurses."

Functioning in the midst of critical shortages of health and medical care facilities and staff, the public hygiene nurses were stationed as accessibly as possible for local residents, and pursued their activities in this context (see 3-3-2 Stationing of Public Health Nurses). Certainly, the public hygiene nurses played a central role in maternal and child health programs in Okinawa.

(1) Administrative Progress

Legislative and budgetary foundations for maternal and child health programs in Okinawa were laid by a staff of three health nurses within the Health and Welfare Bureau, and health nurse managers continue to carry out these duties.

The content of legislation relating to maternal and child health was virtually the same as in mainland Japan, and the overlap between national and local responsibilities made for a complex and difficult set of legal affairs. One example of this is the difficulty in coordinating among national jurisdiction, the authority of the prefectural governors, and the authority of administrative heads. In terms of maternal and child health programs, administrative progress can be tracked as follows:

1) Health Centers were established through the transition from the Okinawa civilian government first to the government of the Okinawan Islands, and then to government of the Ryukyus. The first was the Chubu Health Center [on the main island of Okinawa] in December 1950, followed by

[1] Regarding the content of activities by health nurses in the context of mother and child health measures, see appendix "The Public Health Nurse Manual".

the Hokubu, Nanbu, Yaeyama, and Miyako locations.

2) Maternal and child health activities were carried out in the context of public hygiene nursing programs from 1951, when the stationing of public health nurses was launched in earnest.
3) Activities were stepped up with the official announcement of the Public Health Center Law in August 1952, as maternal and child health guidance was implemented at health centers.
4) Other developments stemmed from the official announcement of the Child Welfare Law in October 1953, such as the establishment of the Maternal and Child Health Record Book system (1954), the Child-raising Medical Expense Disbursement Program (1959), Perinatal and Infant Health Guidance (1965), Health Examinations for Three Year-Olds (1966), and Measures for Premature Babies (1968).
5) With the official announcement of the Maternal and Child Health Law in October 1969, maternal and child health programs based on the Child Welfare Law came to be implemented with a more unified approach to mothers and their infants. Programs initiated from 1971 included newborn home visitation guidance, greater diffusion of maternal protection, and reinforced maternal and child nutrition.
6) The Stillborn Notification Law was officially announced in 1966, but, influenced by the lack of eugenic protection legislation, there were very few notifications. The Eugenic Protection Law was adopted by the local legislature in 1956, but was rejected by the U.S. Civil Administration of the Ryukyus (USCAR).
7) A budget was first allocated for maternal and child health programs in 1965, consisting of $2,349, and this grew to $17,463 by 1970. With the budgeting of expenses for programs, prenatal consultation in areas with few obstetricians was initiated by public hygiene nurses and by midwives in private practice. Free distribution of vitamins for pregnant women with anemia was started in 1967, while maternal and child nutrition reinforcement programs had been implemented from 1961. The latter involved the distribution by municipal governments of powdered milk formula purchased by the government of the Ryukyus.

(2) Progress of Maternal and Child Health Activities

Maternal and child health activities were initiated simultaneously with the establishment of the first health center and the conclusion of the first round of public hygiene nurse training. The public hygiene nurses identified many cases in need of guidance by visiting households with diapers hung out to dry, which they looked for among the itinerant families living in shanties and lacking basic necessities. At the time, it was common to make diapers by cutting up U.S. Military HBTs. Public hygiene nurses carried *habu* snakebite kits, as well as items such as ointments for skin disorders. Also, as there was no running water, and many people would use a single well, "well-side councils" were used as a forum for education on health and hygiene.

It was the "pub-nurse spirit" that kept the public hygiene nurses going in areas that had been

ravaged by the war and where doctors were in extremely short supply. Maternal and child health activities characteristic of those carried out in Okinawa are introduced below.

1) Characteristic Activities Prior to Reversion to Japan

Consultation of Motherhood: Implemented in areas with few obstetricians, at community centers, midwifery clinics, public hygiene nurse posts, and health centers. Public hygiene nurses conducted interviews, urine analysis, blood pressure and body weight measurements, and health guidance, cooperating in teams with midwives in private practice who mainly conducted examinations. This technique is still used in certain districts.

Issuance of Maternal and Child Health Record Books: Initiated in conjunction with the enactment of the Child Welfare Law, but remained at low levels. Public hygiene nurse managers sought greater diffusion by increasing the numbers of public hygiene nurses assigned to maternal and child health programs. The receipt and use of a record book while pregnant was made a condition for participation in baby contests, while other efforts included partial revision of the Immunization Law and the requirement that record books be presented and inscribed at the time of vaccinations. As a result, the number of record books issued expanded from 1,512 in 1962 to 11,092 in 1965, and to 19,715 in 1971.

Nutrition Reinforcement Programs: As it was difficult to procure milk throughout the prefecture, powdered milk formula was purchased and distributed through the municipal governments. It was also found through prenatal checkups at health centers and prenatal consultation that there was a high incidence of pregnancy anemia, and vitamins were also purchased for distribution through the municipalities. This was discontinued, however, in conjunction with reversion to Japan.

Infant and Child Physical Development Survey: Centered on the health centers, this was conducted in 1971 to ascertain the physical development status of infants and children. The public hygiene nurses carried the few scales that were available from place to place to measure body weight and height. The results indicated that there were no substantial differences compared with mainland Japan in terms of weight and length at birth, but that gaps gradually appeared subsequently. Nutrition-related efforts from the weaning period were thus re-intensified.

Survey of Conditions of Pregnant Women: In 1971, in order to clarify the situation with respect to death rates for newborn babies and infants, public hygiene nurses made periodic visits to the homes of pregnant women and conducted a survey to confirm the results. This led to thorough submissions of stillbirths, births, and deaths, and it became possible from the following year to accurately ascertain these death rates.

Measures for Infants with Rubella-induced Disabilities: There was an outbreak of rubella throughout Okinawa from late 1964 to early 1965, and there were large numbers of babies with congenital hearing and other disabilities born to women who contracted rubella in the early stages of their pregnancies. The government of the Ryukyus requested Japanese assistance, and the Prime Minister's Office secured the cooperation of the Ministry of Health and Welfare and the Ministry of Education in clarifying the condition of children with mental and physical disabilities thought to have been caused by rubella. Technical assistance delegations were dispatched from 1969 to 1971 in order to promote health and medical care for these children, educational measures, etc.

Examinations

Primary examination teams were composed of doctors specializing in pediatrics, otolaryngology (ENT), ophthalmology, psychiatry, and orthopedics, as well as vocational trainers, speech therapists, and psychological diagnosticians, with the objective of clarifying actual conditions. Examinations were conducted at the Naha, Koza, Nago, Miyako, and Yaeyama Health Centers. A total of 555 examinations were carried out, with 360 cases identified with irregularities thought to be due to prenatal exposure to rubella. These consisted of 52 cases of congenital heart defects, 28 cases of congenital cataracts, and 339 cases of hearing disabilities, including 21 cases of severe prenatal rubella syndrome involving the heart, eyes, and hearing.

The Public Hygiene Department of the Bureau of Health and Welfare of the government of the Ryukyus assigned all of the functions of the health centers and public hygiene nurses to help with the examinations, while the Public Welfare Department dispatched staff from welfare administration offices and children's consultation centers to the examination sites to conduct various welfare-related procedures such as applications for Disabled Persons' Record Books, applications for compensatory equipment, and requests for designation under the Special Child Dependent Allowance program. The public hygiene nurses played especially important roles in terms of facilitating a smooth process, including the identification of children in need of examination, preparation, participation in the examinations, and post-examination administrative processing. Meanwhile, the health nurse managers in charge of maternal and child health programs worked to prepare for the acceptance of the primary examination teams, examination planning, implementation, etc. Examination sessions started early in the morning and continued until 8:00 or 9:00 in the evening, with post-examination administrative processing continuing until late at night.

There were no references or study materials available at the time of the rubella outbreak, so the health centers and public hygiene nurses were also active in the public health education of local citizens, using translations of materials obtained from the U.S. by the USCAR Department of Public Hygiene.

Activities of Related Administrative Agencies

Even as linkage was pursued between the areas of health, medical care, and welfare on the one hand and education on the other, specialist approaches were adopted in various fields. Efforts at integrated education (mainstreaming) were made to the greatest extent possible by the Bureau of Education; and results were achieved at the kindergarten, elementary, junior high, and high school levels through intense teacher training and study.

2) Maternal and Child Health Activities Following the Reversion of Okinawa to Japan

The various provisions of Japanese law were effected from May 15, 1972, and, because the gaps resulting from the 27 year break in continuity were quite substantial, days of anxiously wondering how to bridge these gaps ensued. Okinawa Society of Child Health was formed in 1973 in order to promote group education and development, and teams including pediatricians, health nurses, medical technologists, nutritionists, and municipal government workers were assembled to implement general health examinations for infants and small children. The activities conducted by means of this distinctive system are still being continued today.

With the reversion of Okinawa to Japan in 1972, a Maternal/Child and Adult Health Sub-section was established in the Prevention Section of the Environment and Health Department, with a health nurse installed as the sub-section manager. The Maternal/Child and Adult Health Sub-section became the Maternal and Child Nutrition Sub-section in 1974; the name was changed again to the Maternal and Child Health Sub-section in 1976, and renewed emphasis was placed on maternal and child health measures. In 1983, the Health Nurse Sub-section and the Maternal and Child Health Sub-section were merged into a single Health Guidance Sub-section, with a health nurses subsequently serving as the manager of this entity and working to promote maternal and child health administration in Okinawa Prefecture.

a) Overview of Measures Based on the Maternal and Child Health Law

Post-reversion maternal and child health measures have been implemented in accordance with the Maternal and Child Health Law (Law No. 141 of 1965). General health examinations for pregnant women and infants, a treatment assistance program for toxemia of pregnancy, etc. were implemented at public expense in 1973, and a research program for the treatment of chronic pediatric ailments was implemented in 1974.

In 1975, child-raising medical care that had previously been conducted through the Disability Welfare Section was transferred administratively to the Prevention Section, and this led to the enhancement of treatment guidance at health centers. As there were very few facilities capable of surgery for children with heart conditions in Okinawa prior to reversion, and as there were also few pediatricians and specialists, requests for assistance from the Japanese government resulted in a response mechanism from 1968 that involved a legally exceptional framework for child-raising medical

expense disbursements provided by Japan for treatment received outside the prefecture. Accordingly, some 129 persons had undergone surgery in locations other than Okinawa Prefecture by 1975, and, although the numbers are currently very small, treatment outside the prefecture continues to be covered for children with heart conditions that are difficult to handle within Okinawa.

Also in 1975, a local maternal and child health center was established in Nakazato Village on the outlying island of Kumei, reflective of the fact that there was no birthing facility on the island. A similar center was established in Irabu Town on Miyako, thereby strengthening health management capabilities for perinatal women.

A detection program for congenital irregularities was implemented in 1977 as a means of preventing congenital abnormalities, and the same year saw municipal governments introduce menus for maternal and child health care services as a means of improvement. Steps to further strengthen municipal programs included the implementation of health examinations for 18 month-old infants from 1978.

Neuroblast examinations for six month-old babies and a program to prevent maternal and child B-hepatitis infection were added in 1985, with corresponding reinforcement of maternal and child health.

In 1994, with the enactment of the Community Health Law, the Maternal and Child Health Law was also partially revised. Maternal and child health programs formerly implemented by the prefectures (health examinations for pregnant women, infants, and three year-olds, newborn home visitation, etc.) have thus been implemented from 1997 by the municipal governments, which are more accessible for citizens.

b) Special Measures Accompanying the Reversion to Japan

Powdered milk formula for infants, commonly known as "circle-Oki-milk" because of the symbol shown in the illustration [the ideograph in the circle is the "Oki" in Okinawa], was part of a package of special measures adopted at the time of reversion under the auspices of the Ministry of Agriculture. Specifically, the Special Measure Relating to the Import of Specified Milk Products as Ingredients for Infant-use Powdered Formula provided for the availability of cans of powdered formula bearing the "circle-Oki" symbol at prices cheaper than in mainland Japan.

c) Establishment of Implementation Structures for General Health Examinations for Pregnant Women and Infants

Consultations for pregnant women and infants that had previously been conducted by health nurses working in health centers and municipal governments were implemented from 1973 at public expense in the context of general health examinations for pregnant women and infants. Such examinations for pregnant women were consigned to prefectural physicians associations and national

medical institutions. For infants, however, due to the small number of pediatric specialists and in order to prevent disparities in a prefecture having many remote islands and isolated areas, implementation was consigned to the present Okinawa Prefecture Pediatric Health Association (founded in 1983 and incorporated in 1981). Joint infant health examinations were planned in each municipality, undertaken by teams that included pediatricians, health nurses, medical technologists, and nutritionists. The Pediatric Health Association has received praise for the high level of precision of this "Okinawa method," and all of the municipalities consigned infant health examinations, for which they became responsible for from fiscal 1997, to the association. Locally posted health nurses worked to ensure smooth processes, coordinating examination planning, preparation, and guidance functions with the maternal and child health staff members of the municipal governments.

Health centers are also positioned as follow-up institutions, and requisite follow-up health examinations have been implemented in the context of community-based guidance by specialist physicians, psychological counselors, health nurses, etc.

d) Initiation of Municipal Maternal and Child Health Programs

Menus were created in 1978 for various municipally implemented maternal and child health programs, namely health consultation programs for pregnant women and infants, maternal and child health guidance programs, and maternal and child health promotion personnel activity programs, thus allowing more efficient implementation of maternal and child health measures.

Further enhancements in infant health examinations were grounded in legal provisions, specifically accompanying the 1994 revision of the Maternal and Child Health Law with respect to the health examinations for 18 month-old infants that had been implemented from 1978. These were now conducted by health centers, which had been legally responsible from 1966 for the implementation of examinations for three year-olds.

A special model program for community maternal and child health was also newly added in fiscal 1990, with a health and welfare experiential learning program for adolescents and a consultation assistance program for healthy infant and child development added in fiscal 1991.

These programs were combined in 1995 into a package of child-friendly neighborhood planning programs to promote an environment for the healthy birth and development of children from the standpoints of both welfare and health.

e) Infant and Child Medical Care Expense Subsidy Program

Starting in 1994, the Infant and Child Medical Care Expense Subsidy Program has promoted the early discovery and treatment of infant and child disorders, has supported the healthy development of infants and children, and has installed a system that makes it easy to receive medical treatment for infants and children in the context of facilitating development of the child-raising environment. In this program, the prefectural government pays a subsidy amounting to half of the relevant expenses.

f) Revision of the Maternal and Child Health Law, and Complete Application of the Community Health Law

With the passage of the Community Health Law and the revision of the Maternal and Child Health Law in 1994, and the with the complete application of the former from April 1997, basic services such as health examinations began to be carried out by the municipal governments, which provided greater accessibility to citizens. Specialist services were taken on by the health centers.

Staff handling maternal and child health in the Superintendence Section of the prefectural government established a committee in September 1995 to prepare for the transfer of responsibility to the municipalities, and a maternal and child health manual was also created in order to facilitate a smooth transition of maternal and child health programs.

Health centers also worked in cooperation with the municipalities, providing guidance for the formulation of municipal maternal and child health plans. From 1997, the health centers took on the implementation of specialist and wide-area programs for premature babies, children with chronic pediatric ailments, and physically and mentally disabled children.

Thus, with respect to the complete application of the Community Health Law and the transfer of administration to the municipal governments, the combined efforts of the Superintendence Section of the prefectural government, the health centers, the municipal governments, locally posted health nurses, and relevant institutions and organizations led to the start of a new system of community maternal and child health activities from fiscal 1997.

Keywords: Public hygiene nurses, Maternal and child health programs, Health Center Law, Child Welfare Law, Maternal and Child Health Law, Prenatal consultation, Maternal and Child Record Book, Infant and Child Physical Development Survey, Survey of Conditions of Pregnant Women, Infants with rubella-induced disabilities, Okinawa Society of Child Health, Municipal maternal and child health programs, Infant and Child Medical Care Expense Subsidy Program.

REFERENCES

<Japanese>

Boshi hoken manual (dai 3 ban) [Maternal and Child Health Manual (3rd Ed.)]. Nankodo. 1995.

Bureau of Health and Welfare, Government of the Ryukyus (1969) *Kosei gyosei gaiyo ('72 fukki he no shihyo) [Health and Welfare Administrative Overview (Pointers for the '72 Reversion)]*.

Chiiki boshi hoken to hoken-fu no hatasu yakuwari [Community Maternal and Child Health and the Roles Played by Health Nurses], Tokyo Igaku-sha, Shusanki igaku *Perinatal Medicine*, Vol.9, No.6. 1979.

Consideration Team Dispatched by the Japanese Government (1969) *Fuushin ni yoruto omowareru shinshin-shogai-ji kento hokoku [Report on Consideration of Children with Physical and Mental Disabilities Thought to be Induced by Rubella]*.

Environment and Health Department, Okinawa Prefecture (1986) *Hoken-fu binran (hoken shido-hen) [Health Nurse Handbook (Health Guidance Edition)]*.

Health Enhancement Division, Welfare Department, Okinawa Prefecture (1998) *Okinawa Ken no boshi hoken [Maternal and Child Health in Okinawa Prefecture]*.

Japan Public Hygiene Association (1993) *Fumishimete 50 nen, hoken-fu katsudo no rekishi [A 50 Year Retrospective on the History of Health Nurse Activities]*.

Okinawa Locally Posted Health Nurse Project (1999) *Hito-bito no kurashi to tomo ni 45 nen [45 Years Together with People's Daily Lives]*. Okinawa Prefecture.

Okinawa ni okeru hoken-fu katsudo [Health Nurse Activities in Okinawa]. Shusanki igaku *[Perinatal Medicine]* Vol.17, 7.: Tokyo Igaku-sha. 1987.

Okinawa Prefecture Chapter, Health Nursing Division, Japan Nursing Association. (1982) *Okinawa no koshu eisei kango jigyo 30 shunen kinen-shi [Commemorating the 30th Anniversary of Okinawa's Public Hygiene Nursing Programs]*.

Okinawa Society of Child Health (1983) *Okinawa Ken Shoni Hoken Kyokai no 10 nen [10 Years of the Okinawa Society of Child Health]*.

Ibid. (1989) *Okinawa no shoni hoken no ayumi [A History of Okinawa's Pediatric Health]*. Okinawa shoni hoken *[Okinawa Pediatric Health]*. Vol.16.

Okinawa Society of Child Health (1995) *Okinawa Ken Shoni Hoken Kyokai 20 nen no ayumi [A 20 Year History of the Okinawa Society of Child Health]*.

Prevention Section, Environment and Health Department, Okinawa Prefecture (1981) *Okinawa sengo no hoken-jo no ayumi-Hokenjo 30 shunen kinen-shi [A History of Health Centers in Postwar Okinawa-Commemorating the 30th Anniversary of Health Centers]*.

Public Hygiene Nurse Group, Okinawa Nursing Association (1967) *Okinawa no koshu eisei kango jigyo 15 shunen kinen-shi [Commemorating the 15th Anniversary of Okinawa's Public Hygiene Nursing Programs]*.

Supervised by the Maternal and Child Health Division, Children and Families Bureau, Ministry of Health and Welfare (1996) *Boshi hoken manual* [*Maternal and Child Health Manual*. the Maternal and Child Health Research Council].

Box 4: Health Nurse "T" and the Children of an Remote Island

After the war, many people moved from the main island of Okinawa and from Miyako to settle the back side of Ishigaki. The living environment was hard, and whole families were engaged from dawn to dusk in clearing land and farming. The health nurses traveled about looking after the health of these residents, even outside normal working hours, paying particular attention to cleanliness in the daily lives of children. They checked to see whether the children that they came across had bathed and washed their hair, as well as looking at their nails, clothing, etc. Even by the side of the road, a health nurses would take out a pair of nail clippers from her visiting bag, and clip the children's nails. She would also help the children wash their hands and feet and hair at one of the village's two water supply pipes. On Saturdays she would make a fire to heat the bathing tub at the public health nurse stationing location, and show the children directly how to take a bath and keep themselves clean. Even when parents knew the importance of cleanliness, life in an area without sufficient water made it hard to implement. Nevertheless, they began to take better notice along with the changes that they were seeing in their children. And the children themselves began to heat water for their baths, and to wash their hair and pay more attention to cleanliness. A small pair of nail clippers in a visiting bag can be a very important instrument.
(Circa 1964)

(Nakazato)

3-5 Development of Emergency Transportation System

3-5-1 Medical Support Information Network for Outlying Islands

Kaoru Ashimine
Deputy Director, Okinawa Chubu Hospital

Makoto Suzuki
Professor Emeritus, University of the Ryukyus,
Okinawa Research Center for Longevity Science

(1) History of Medical Support Network

Okinawa Prefecture is a group of 160 islands scattered over a wide area of ocean 1,000 km from east to west and 400 km from north to south. Among these islands are 40 that have been designated as "populated outlying islands." Okinawa Prefecture divides itself into five health-care districts, each of which has a prefectural hospital that serves as the "central" hospital. There are also clinics attached to the prefectural hospitals that are located on 20 islands with populations of 300 or more.

The main medical stuff for the clinics on outlying islands comes from graduates of the Jichi Medical School, and also from national medical exchange students and medical servicemen. Other than the medical servicemen, most of the doctors are young doctors still in training, approximately 3-7 years out of medical school. Stationed on islands walled off by the sea, they are prone to feelings of anxiety and abandonment, and so Okinawa Prefecture has built a network for their support that supplements the information available to them and attempts to relieve some of the feelings of "waging a lonely war" with the limited resources and functions of clinics.

Below is a brief outline of the history of the medical support information network for outlying islands that has been erected by Okinawa Prefecture.

1) When the medical school of University of the Ryukyus opened its hospital in 1972, the hospital's Community Medical Care Department became one of the first in Japan to install an electrocardiogram transmission and analysis system. Telephone transmission experiments from outlying islands and remote villages indicated both transmission precision and analytical results to be acceptable, and further experiments demonstrated the system to be fully usable for both wired (telephone line) and wireless (VHF, microwave) transmissions.

   Transmissions to remoter areas using OH lines were subject to the influence of atmospheric pressure and weather; changes in transmission voltage produced wave distortion that rendered this medium unsuited to electrocardiogram transmissions. Wired transmissions were also influenced by the age of the lines and the location of telephone poles. When lines traveled too closely to the coast,

reflection from the water's surface produced distortion that impeded transmissions. Replacement of telephone lines and relocation of telephone poles were sought.

The software and hardware used by the system continued to be upgraded. The original one-channel electrocardiogram transmission was switched to a three-channel simultaneous transmission system; the analog transmission system that relied on audio couplings was changed to a modem-based digital transmission system; and steps were taken to reduce transmission times and simplify procedures. Transmission experiments demonstrated that one-channel electrocardiogram transmissions were possible from locations 1-15 below.

Locations with transmission terminals

1. Kunigamison okunikitakuni elementary school
2. Ie public clinic
3. Minamidaito public clinic
4. Kitadaito public clinic
5. Ikona public clinic
6. Kudakajima
7. Zamami public clinic
8. Tokashiki public clinic
9. Miyako prefectural hospital
10. Yaeyama prefectural hospital
11. Ohara post office
12. Iriomote seibu prefectural hospital
13. Stationing of public health nurses at Yaeyama clinic
14. Yonakuni public clinic
15. Hateruma public clinic

2) In 1976, Hateruma, a classic, isolated island that lacked a doctor (although it did have a medical serviceman and public health nurse) was designated an "experimental island" and community medical activities were begun with the goal of providing residents with health care services on par with the mainland. Yaeyama Prefectural Hospital participated in regular resident checkups, with records kept of internal treatments and resident electrocardiograms, which were then transmitted by telephone for further analysis.

3) In 1978, one physician interested in general practice was stationed on the island. The Western District of Iriomote Island, which is also a geographically isolated island, was hundred also designated for experiments, projects were initiated to gain additional insights into how remote medical systems could be run in coordination with local physicians (prefectural clinics), and a system was developed that provided central management of resident health information. In practical terms, these activities discovered latent diseases and provided advice on care to local physicians. A three-channel electrocardiogram transmission terminal (fixed type) was installed in the Iriomote Seibu Prefectural Clinic, creating a system for three-channel, direct electrocardiogram telephone transmissions between the clinic and the Community Health Care Department that served as the center for the program. Use of the system by local physicians helped to establish its practical

application.

4) In 1979, the Ministry of Health and Welfare and the Medical Information System Development Center provided cooperation for the experimental operation of a medical information support system using the Yaeyama Health-care District as the model district. This was the first such medical information support system in Japan.

5) In 1980, a report was prepared on the health care status of Hateruma and Iriomote for the preceding five-year period, and conclusions were drawn about the nature of outlying island medical care that could be served by medical information systems and about the areas suited to such systems. The medical information systems of Hateruma and Iriomote were taken over by the Medical Information Development Center, which commissioned the Okinawa Prefecture Environment and Health Department (currently the Okinawa Prefecture Welfare and Health Department) to further develop the system for practical application.

6) In 1981, Kumejima, an isolated island was added to the list of designated experimental islands. During the first year, a general field survey was conducted, with the resident checkups coming in 1982 based on the results of the survey. Researchers worked in conjunction with local physicians to provide ongoing treatment for manifest conditions, and early identification and treatment of latent diseases.
The electrocardiogram transmission system served on both the health maintenance and transmission sides as a valuable support system for medical care on outlying islands.
During this year, the "Special Allowance for Okinawa Prefecture Traffic Law Changes" provided funding for the installation of facsimiles (20) and a still picture transmission units (15) to link up clinics on outlying islands with Chubu hospitals. This equipment was not very effective, however, because of the lack of clarity in the images and the times required for transmission.

7) In 1998, graduates of the Jichi Medical School, requiring an information network, created their own network based at Chubu Hospital. The original network, was built to with funding provided by Dr. Kategawa, who was then stationed at Hama clinic, and this network provided the basis on which the current network stands.

8) In 1993, the Local Society Promotion Foundation provided assistance for the start up of a medical information network hosted by the Local Rescue and Emergency Department of the Chubu Hospital. The network used two Macintosh computers as servers, one hosting an electronic conference room, the other medical information searches.

9) In 1995, a joint program by the Ministry of Health and Welfare and Ministry of Home Affairs under the " Plan to Enhance Fiscal Assistance Measures for Medical Care in Remote Areas" resulted in the installation of a Remote Island Health and Medical Care Information System in Okinawa Prefecture. Telephone lines, personal-computers, facsimiles and other peripheral equipment are now installed in five prefecture hospitals and all outlying islands.

10) In March 1999, the prefectural Welfare and Health Department and the Hospital Management Bureau too the lead in establishing an Okinawa Prefecture Outlying Islands and Remote Area Remote Medical Support Information System Study Committee. Committee members were organized into five subcommittees: 1) Intranet/Internet Installation Subcommittee (chaired by Yoshitaka Arakaki), 2) Teleradiology Installation Subcommittee (chaired by Akira Hori), 3) Telepathology Installation Subcommittee (chaired by Nobuyoshi Kunishima), 4) Echo Image Transmission (Experimental) Installation Subcommittee (chaired by Hirotsugu Matsumoto), and 5) Outlying Islands Physician Support Network Installation Subcommittee (chaired by Hirotsugu Matsumoto). Membership in the subcommittees came from people working at all of the prefectural hospitals, several associated clinics and a number of public clinics. Each of the prefectural hospitals built their own networks connecting them to their clinics, and also built networks with the Okinawa Chubu Hospital. These networks enabled hospitals and clinics that lacked radiology specialists and pathologists to transmit X-ray images (teleradiology), pathology samples and cell diagnoses (telepathology) to the chubu hospital. Remote operation of microscopes is also possible.
In 1999, the central government began a "Remote Area Remote Medical Care System Development Program" in Okinawa Prefecture and conducted a battery of demonstration tests for the system.

11) The conclusion of the central government model program in 2000 gave the prefectural government responsibility for the system and equipment, which began to be operated as the "Okinawa Prefectural Outlying islands and Remote Area Remote Medical Support Information System."
This system provides a network between 7 prefectural hospitals and 20 clinics on outlying islands (including two municipal clinics). It is able to collect information over both the Internet and intranet, and provides consulting, radiology and pathology services using transmitted images.

(2) Current system

1) Remote Island Electronic Conference Room

The current system uses the "First Class" BBS software. Users access their remote machine over telephone lines 24 hours a day and can use the software to exchange opinions and information. The software also provides electronic mail functions, a Q&A section on issues facing outlying islands and bulletin boards for individual areas of specialty. The electronic mail functions are used for private

matters. The bulletin board systems allow users to write freely on topics posted. The system functions as a conference room that is not limited by either time or space.

2) Literature searches

One Macintosh is used exclusively for the CD-ROM "Medline" published by the Silver Platter Information Inc. Physicians on remote islands can access the computer and use it to search the CD-ROM.

3) Continuing education

The emergency room of the Chubu Hospital posts pathologies, reports of examinations results and images of important cases so that physicians stationed on outlying islands are able to learn from cases seen at the Chubu Hospital. Physicians on outlying islands also post case histories and consult with the staff of the Chubu Hospital on diagnoses and treatments.

Keywords: Remote Island Medical Support Information Network, Electrocardiogram telephone transmission and automatic analysis system, Remote island medical system, Medical information support system, Remote island medical care characteristics and medical district medical care information network, Remote island and remote area health care and medical care information system, Remote island and remote area remote medical care support information system, Intranet/internet, Teleradiology, Telepathology, Echo image transmission, Remote island support network, Remote island electronic conference room, Continuing education

REFERENCES

<Japanese>

Sakihara. E. (1995) *Okinawa ken ritou shinryojo network no genjo to kongo no tenbo [Status and Outlook for Okinawa Prefecture Remote Island Clinic Networks]*.

Shin iryo [New Medical Care] Vol. 22, 8. MEC Promotion Association: Tokyo

3-5-2 Emergency Patient Transportation

Kaoru Ashimine
Deputy Director, Okinawa Chubu Hospital

(1) Emergency Medicine

Okinawa Prefecture has one of the best organized and functioning emergency medical systems in Japan. All health-care districts have night-time emergency medical centers or designated emergency hospitals able to accept emergency patients without warning. The choice of institution can be made freely from among Level 1 to Level 3 institutions. Critical patients are transported without delay to a Level 3 emergence institution. There is, in other words, no "run-around" for emergency patients. The Okinawa Chubu Hospital is the only rescue emergency center in the prefecture and is able to provide treatment for patients from Level 1 all the way to Level 3.

(2) Emergency Operations

Transportation of emergency patients is carried out smoothly, from the home to the emergency diagnosis center, from the emergency diagnosis center to the Level 2 or Level 3 facility, and from the Level 2 facility to the Level 3 facility. On the main island, roads and ambulances are used for transportation. On remote islands, helicopters are used.

1) The prefectural Health and Welfare Department sponsors the "Steering Committee for Helicopter-borne Doctor Recruiting" that determines the details of this program.

Participating hospitals rotate responsibilities on a daily basis.[*1] Generally, responsibilities are from 9:00 a.m. to 9:00 a.m. the next day; Saturdays and Sundays are handled by two hospitals in a two-week rotation. The Prefectural Naha Hospital is responsible for all transportation of premature infants.

When a request for emergency patient transportation is received from a remote island, the physician in charge discusses the case with the local physician and determines whether the patient needs to be accompanied. At the Okinawa Chubu Hospital, the priorities for doctors accompanying patients on helicopters are: (1) patients with tubes, (2) patients with unstable vital signs, (3) other patients as determined in consultations.

At night-time, doctors from the overseeing hospital are not, in principle, required to ride in helicopters. However, they do go to meet patients at the heliport.

Doctors are insured to cover accidents in during flights.

[*1] Rotation: Monday: Tomishiro Chuo Hospital; Tuesday : Urasoe General Hospital; Wednesday: Nanbu Tokushukai Hospital; Thursday: Naha City Hospital; Friday: Okinawa Naha Hospital; Saturday: Okinawa Nanbu Hospital, Okinawa Joint Hospital; Sunday: Okinawa Red Cross Hospital, Okinawa Chubu Hospital.

2) Emergency patient transportation by the Self Defense Forces

Prefectural hospitals and private hospitals actively participate in the emergency helicopter transportation of patients from remote islands to the main island. Below are statistics on transportation to date.

The total number of airlifted patients from 1972 to 1997 was 4,615; the total for 1998 (January-November) was 180. A breakdown will be found in Table 3-2 for each island.

Table 3-2 Breakdown by Island

Island	1972-1997	1998	Island	1972-1997	1998	Island	1972-1997	1998
Kumejima	1806 (39.1%)	103 (39.1%)	Ihirayajima	289 (6.3%)	7 (6.3%)	Kitadaitojima	196 (4.2%)	7 (3.9%)
Minamidaitojima	492 (10.7%)	13 (7.2%)	Miyakojima	274 (5.9%)	2 (1.1%)	Tonakijima	152 (3.3%)	1 (0.5%)
Izenajima	430 (9.3%)	10 (5.6%)	Tokashikijima	264 (5.7%)	17 (9.4%)	Ishigakijima	121 (2.6%)	0
Awakunijima	339 (7.3%)	10 (5.6%)	Zamami, Akajima	210 (4.6%)	10 (5.6%)	Iejima	23 (5.0%)	1 (0.5%)

A comparison of 1998 statistics with previous years shows an absence of emergency transportation from Ishigakijima. This is probably because enhancements to Yaeyama Hospital have significantly reduced the need for emergency transportation. Only two patients were transported from Miyakojima for similar reasons.

Emergency transportation is particularly common from Kumejima. This island has a relatively high population, so it obviously will have more patients. Still, in 1998, it accounted for 57.2% of the total. The Kumejima Hospital will open in 2000 and this is expected to significantly reduce the need for emergency helicopter transportation from the island.

Keywords: Emergency medical care system, Emergency helicopter transportation

3-6 Infectious Diseases

3-6-1 Gastrointestinal Infectious Diseases

Seisho Higa
Director,
Chuou Health Center, Okinawa Prefecture

(1) Introduction

In the past, infectious gastrointestinal inflammation rivaled respiratory disease as the top killer in Okinawa, but around 1954 began to be supplanted by stroke, heart disease and other degenerative conditions. The majority of infectious gastrointestinal information seen in the postwar period consisted of either dysentery or typhoid fever.

Typhoid fever occurs primarily from contaminated food or in isolated instances from contact with carriers, but dysentery is caused by contaminated drinking water. Mass outbreaks at day care centers, schools and villages accounted for well over one hundred cases each year through 1972. In 1969, a mass outbreak affected 1,886 people; in 1970, 1,795.

(2) Factors in Mass Outbreaks of Dysentery

1) Carriers

It is not easy to identify carriers of dysentery bacteria in group examinations, but when there is an outbreak, a carrier is present or a former dysentery sufferer has been inadequately treated, or the disease has developed a resistance to drugs, so intermittent release of bacteria.

2) Groundwater contamination from toilet tanks

Prior to Okinawa's reversion to Japan in 1972, most toilets were of the "hole in the ground" variety, with storage tanks varying from bare roles to drum cans to cement tanks. Most, however, were simple structures built outside. Cans and tanks began to leak as they grew old, and they overflowed during heavy rains, contaminating well water and drinking water. Tanks are also breeding grounds for flies, mosquitoes and other pests, and bacteria are often transmitted by flies, cockroaches, mice and other animal carriers.

3) Drinking of untreated water

In 1951, the city of Naha became the first in postwar Okinawa to install a simple water system. Funding for this project was provided by the USCAR. Other areas, however, were slow to install water systems and areas using well water for drinking purposes often did not disinfect the water. In

other circumstances, for instance the drying up of the aquifer at drought or the muddying of water during heavy rain, increased the opportunities for children and others to drink untreated water. This in turn caused massive outbreaks of dysentery from contaminated water.

4) Lack of education and publicity on hygiene

At the time, the school curriculum treated health education insufficiently and there was also a lack of hygiene information on the radio and television. Adults, hard at work trying to support their families, had few opportunities to teach their children about health in the home. The health centers engaged in preventative activities in conjunction with municipal governments, but the lack of social infrastructure made these of limited affect.

(3) Improvements in Mass Outbreaks of Dysentery by Treating Sources and Paths of Infection

1) Water system construction

After Naha installed its water system, many other municipal governments also began water projects, including Nago in 1953. Some neighborhoods installed their own water systems separate from the municipal system. The systems were funded with the commissioner.

The U.S. military provided surplus water from its base water supplies to the surrounding municipalities, and in 1958 the USCAR established the Ryukyu Water Company as a subsidiary institution. This company sold water commercially, and in doing so was instrumental in meeting the demand for water from the prefecture's residents and in furthering industrial development. After the restoration of Japanese rule in 1972, the water company was changed to the Okinawa Prefecture Bureau of Enterprises, under which name it continued to provide water to the prefecture's residents. The government of Japan subsequently enacted a series of three development projects for Okinawa, during which it developed dams, undersea water lines and desalination facilities. Today, 99.7% of Okinawa's residents are served by the public water system, which is higher than the national average. Safe drinking water is available throughout the prefecture.

2) Sanitary treatment of night soil

At the time Okinawa was returned to Japanese rule, sewers treated only 17 kiloliter of night soil a day, a mere 1.4% of the total. The rest was collected by night soil processors or treated by residents themselves. In 1976, treatment with septic tanks began. Septic tank installation moved forward as economic activity increased, and city planning brought an acceleration of sewer installation as well. In 1996, the "flush toilet rate," measuring all served by public sewer systems or septic tanks, was 86.8%.

3) Improved living environments

The activation of the Japanese economy as a whole and the strong business conditions this produced resulted in significant improvements in Okinawan living environments. More flush toilets were installed, it was easier to use soap and water to wash one's hands after using the toilet, and it was one difficult for mediating insects and mice to infiltrate facilities.

4) Improvements in the health-care network and acceleration of reporting

Local health-care officials are able to deal more quickly with those infectious diseases requiring reporting, enabling steps to be taken before the extent of the contagion spreads.

(4) Summary

There are still isolated incidences of dysentery and typhoid fever reported today. Typhoid fever is the result of infection from carriers, but a growing number of dysentery cases are the result of "imports." Even Shigella Flexneri, which had apparently disappeared at one point, is making a comeback. Some antibiotics are effective in combating these diseases, but more resistant strains of bacteria have also been seen, so antibiotics must be used with care. The passage of the new Infectious Diseases Law has decreased the number of beds available for treatment, so medical institutions will need to better coordinate their responses in the future.

Keywords: Dysentery, Mass outbreak, Contaminated drinking water, Water systems, Sanitary treatment of night soil, Health-care networks

REFERENCES

<Japanese>

Environment and Health Department, Okinawa Prefecture (1994) *Okinawa ken no suido gaiyo [Okinawa Prefecture Water System Overview, FY 1992 edition]*.

Ibid. (1998) *Kankyo seibi jigyo no gaiyo [Environment Improvement Project Overview, FY 1996 edition]*.

3-6-2 Vaccinations

Ariaki Odo
Director,
Nanbu Health Center, Okinawa Prefecture

(1) Outline of Vaccination Programs

In August 1945, immediately after the end of World War II, a 15-member advisory committee was established, under which a Public Health Department was set up. The advisory committee was reorganized into the Okinawa's Civil Administration in 1946. In 1950, the start of the Okinawa archipelago government resulted in the establishment of health centers and the beginning of substantial public health activities in local communities. The main prongs of public health activities at the time were venereal disease, infectious disease and parasites.

1) In January 1951, Order No. 46 of the USCAR, entitled "Treatment of Infectious Diseases," mandated the creation and management of a formal vaccination plan.
   This plan included regular vaccinations for smallpox, diphtheria, whooping cough and polio; irregular vaccinations for typhoid, paratyphoid fever, eruptive typhus, cholera and plague. In July, vaccinations were incorporated as a part of health care office activities.

2) In 1964, the Ryukyu Government Vaccinations Law was passed. The health center director was given responsibility for implementing vaccinations under the law, with communications passing from the director to the head of the self-governing society for each neighborhood via the mayor, and from there to the individuals scheduled for vaccinations. Communications included the date, time, place and type of vaccinations to be performed. Most vaccinations were given at health centers, municipal government offices and local public calls. At times, kindergarten and elementary school classrooms were also used.
   Vaccinations were administered by public health care nurses who rode jeeps and ships to provide vaccinations to outlying islands and remote villages.

3) With the reversion of Okinawa to Japanese rule in 1972, the mayor was given responsibility for vaccinations under the Vaccinations Law, with contracts entrusting vaccination programs signed between the mayor and the Medical Association. In July 1970, the cabinet understanding on "Measures to Deal with Vaccination Accidents" made Okinawa eligible for vaccination accident relief measures.

4) The Vaccinations Law was amended in 1994. All vaccinations that had previously been

administered as government programs were changed to voluntary incentive programs with ultimate responsibility resting upon the guardian (parent).

The diseases to be vaccinated for also changed. Japanese encephalitis was added to the list of regular vaccinations, while influenza was dropped. Vaccinations for chicken pox and mumps were made voluntary.

There are currently several problems being experienced with vaccinations. Antibody levels are declining for some age groups that have been given polio vaccinations, hearing loss has been experienced after vaccination for mumps, under the prevalence of measles, sick infant, sick elder children after vaccination, and both individual and incentive vaccination rates are declining. Further study will need to be made of ways in which these problems can be addressed.

(2) Vaccination

1) Smallpox

Smallpox regulations were first passed in 1879, at which time the first smallpox inoculations were administered in the prefecture. After the war, a 1946 U.S. Military Administration order mandated inoculations for children between 3 and 18 months of age, but in 1964 the Ryukyu Government Vaccinations Law changed this to 2-14 months. Later, encephalitis and other complications from inoculations were seen around Japan, and amendments to the Vaccinations Law in 1976 established statutory relief measures and changed the coverage of inoculations to 36-72 months. In August 1980, inoculations were suspended after WHO declared smallpox to have been eradicated.

2) Combined diphtheria, whooping cough, tetanus vaccine (DPT vaccine)

For a period of well over 10 years, from just after the war in 1948 until 1962, diphtheria, whooping cough and tetanus were rampant among the children of Okinawa, and prevention became one of the key missions of public health activities. Until about 1955, vaccinations were given individually for these diseases, with diphtheria administered between 6 months and 15 years of age; whooping cough between 6 months and 5 years. In 1957, the Public Health Department of the USCAR made arrangements to import a combined diphtheria, whooping cough, and tetanus vaccine (DPT vaccine) from the United States, and this began to be administered. At the time, a combined diphtheria and whooping cough vaccine was available in Japan, but the DPT vaccine did not become common until about 1972.

The Ryukyu Government Vaccinations Law of 1964 established Phase I vaccines for children of 3-4 months of age and for Phase II was 12-18 months after Phase I.

In 1974, several vaccination accidents were seen in the prefecture, apparently because of whooping cough vaccinations. In 1975, administration of the DTP vaccination was temporarily suspended. A partial amendment of the Vaccinations Law in 1976 provided for Phase I individual

vaccinations from 3 to 48 months of age or group vaccinations from 24 to 48 months; Phase II vaccinations were to come 12-18 months after phase I. Later, acellular pertussis vaccines whooping cough vaccination with few side effects began to be manufactured and acellular pertussis vaccines DPT vaccinations became available.

3) Combined diphtheria and tetanus vaccines (DT vaccines)

After the amendment of the Ryukyu Government Vaccinations Law, the phase one vaccines were administered within 6 months of elementary school matriculation, Phase II within 6 months of elementary school graduation, and Phase III smallpox vaccinations at the same time. The 1976 amendments to the Vaccinations Law resulted in administration of the DT vaccinations as Phase III at age 12, after Phases I and II of the DPT vaccine.

4) Polio

Polio began to be rampant in 1957 and the USCAR imported the Salk vaccine from the United States in order to suppress the disease. Beginning around 1961, the vaccine was administered to children of 6 months to 6 years of age using jet injectors.

In 1963, orally administered live polio vaccines became available but required three administrations over a period of one month: saving vaccine I, saving vaccine I, II and saving vaccine I, II and III. Later, a live polio vaccine that combined I, II and III was manufactured, and beginning in 1966 a vaccination method requiring 2 administrations over a period of eight weeks was adopted.

The amendments to the Vaccinations Law in 1976 resulted in vaccinations for children between 3 and 48 months of age in intervals of at least 6 weeks.

5) Measles

In 1948, measles were rampant throughout Okinawa, and outbreaks of varying sizes were experienced in later years as well. In 1968, the USCAR took steps to important a measles vaccine (Schwarz vaccine) from the United States, which was administered to children between 1 and 3 years of age on a voluntary basis. The next year, 1969, group vaccinations were conducted throughout Okinawa.

The author conducted a study of side effects from the Schwarz vaccine during these group vaccinations. As has been reported elsewhere, approximately 50% experienced fevers of 37.5℃ or more 5-8 days after vaccination, with around 10% experiencing rashes 1-2 days after the fever. In 24 cases, a relationship was found between vaccinations and tuberculin reaction, and in the majority of cases the tuberculin reaction attenuated after vaccination.

At the time, measles vaccination was still in the experimental stages across Japan. A domestic live vaccine had been produced (by the University of Osaka), but it had extremely high side effect rates, so vaccination was performed on experimental basis using a combination of live and inactivated

vaccine or several administrations of inactivated vaccines. However, inactivated vaccines resulted in the contraction of heterogeneous forms of measles, so this method was abandoned.

Later, a domestic live vaccine was developed that had a high antibody retention rate and low side effect rates. Since 1978, measles vaccination has been administered to children of 1-6 years of age throughout Japan.

6) Rubella

In 1964 and 1965, there was a rubella epidemic across Okinawa and many children were handicapped because of this. A Ministry of Health and Welfare fact-finding commission visited the island several times to study the epidemic, which provided the impetus for new advances in rubella research and became one of the first steps towards the development of a domestic live rubella vaccine. A rubella outbreak in Tokyo, Kanagawa and other parts of the greater Tokyo area in the seventies increased the need for rubella vaccination.

The development of a domestic live rubella vaccine resulted in rubella vaccinations being made available to adult women on a voluntary basis in 1975. The vaccination program was not a long-lived, however, because birth control measures were a prerequisite. Nonetheless, the clinical testing technicians at health centers were given special training to make this project more effective, which resulted in health centers gaining the ability to conduct their own rubella HI antibody testing.

In 1978, regular rubella vaccinations began nationwide for junior high school aged girls. Immediately prior to this, rubella HI antibody tests were run for a sample of junior high school girls, and 70% were found to be positive. This indicates that the rubella outbreaks of various sizes on Okinawa have exposed the majority of the population to the rubella virus.

In the 1990s, the combined measles, mumps and rubella vaccine (MMR) began to be administered but serious side effects thought to be caused by the mumps vaccination aseptic meningitis resulted in MMR inoculations being suspended after only a very short period of time.

Currently, measles and rubella are regularly vaccinated for, but the mumps vaccination is voluntary. The vaccines are administered independent of one another.

7) Japanese encephalitis, Influenza

Okinawa experienced rampant Japanese encephalitis in 1953 and influenza in 1957. In 1961, it began vaccinating for Japanese encephalitis. However, full-fledged vaccination programs for both Japanese encephalitis and influenza did not actually begin until Okinawa returned to Japanese rule in 1972. These programs are administered by municipalities under the Vaccinations Law.

8) BCG

Since the war, tuberculosis programs on Okinawa have concentrated on treatment and life-style supervision. Prevention takes the form of anti-tuberculosis INH administration (i.e., chemical

prevention) for junior high school age children with positive tuberculin reactions. BCG vaccines began to be administered in 1965 thanks in a large part to the guidance and assistance of the Anti-Tuberculosis Association.

After Okinawa's reversion to Japan in 1972, BCG vaccines began to be administered to children under the age of 3, and also to first year elementary school children and second year junior high school children in order to prevent tuberculosis.

Table 3-3 Regular Vaccinations, Ages, Frequencies, Intervals

(as of March 1995)

vaccination	Age of administration		Frequency	Interval
DPT I	3-90 months[*1]	First vaccination (Term I under the old system) ordinarily administered between 3 months and 12 months	3	3-8 weeks
		Booster vaccinations (Term II under the old system) delivered at regular intervals starting approximately 6 months after the first vaccination Standard is 12-18 months after first vaccination completed.	1	
DT II	Term I under the old system, between 11 and 12 years (6th grade)		1	
Polio Measles Rubella	3-90 months[*1] (standard 3-18 months) 12-90 months[*1] (standard 12-24 months) 12-90 months[*1] (standard 12-36 months) 12-15 years[*2] (junior high school), male and female		2 1 1 1	6 weeks+
Japanese encephalitis	Term I 6-90 months[*1]	First vaccination (standard 3 years) Booster vaccinations generally 1 year after first vaccination (Standard 4 years)	2 1	1-4 weeks
	Term II 9-12 years (standard 4th grade) Term III 14-15 years[*3] (standard 2nd year junior high school)		1 1	

Notes: 1. The concomitant orders to the Vaccinations Law specify that children be up to 90 months old.
2. Temporary measures to September 2003.
3. Age is more important than school year. Care must be taken not to vaccinate those under 14 years of age.

Keywords: Vaccinations, Health center activities, Mayor, Amended Vaccinations Law, Inoculation incentives

REFERENCES

<Japanese>

Inafuku, M. *Okinawa shippeishi [History of Disease in Okinawa]*.

Odo, A., and Public Health Association. *Koeikyou no ayumi [History of Public Health Associations]*.

Odo, A. (1981) *Hokenjo no ayumi-30 shunen-shi- (hokenjo katsudo no kou) [History of Health Centers, 30th Anniversary (sections on health care activities)]*. Okinawa Prefecture.

3-6-3 Tuberculosis Programs

Tadashi Nakasone
Director,
Hokubu Health Center, Okinawa Prefecture

(1) Tuberculosis in the Postwar Period

In prewar Okinawa, the tuberculosis death rate was estimated at 150-250 (per hundred thousand population). In 1948, the first postwar year for which mortality statistics are available, the tuberculosis death rate was 65.7 and the infection rate (new patient rate) was 489.5. In recent years, the death rate has been approximately 1.0, the infection rate approximately 30, a clear improvement.

In 1951, the Pacific Survey Group of the United States conducted a study of tuberculosis infection among Okinawa residents, and found positive tuberculin reactions for 24% of high-school students, 63% of university students and 89% of government employees. Test X-rays revealed infection for 6% of high school students, 8% of university students and 20% of government employees. In other words, tuberculosis was epidemic. At the time, housing conditions were extremely poor. A standard house was approximately 20 square meters, and large families lived in this space, so infection made rapid progress within families.

In 1955, the infection rate was highest for people in their twenties at 1,687.3, declining to the 1,000 level for the generation in its fifties. This indicates that the infections were highest among those in the prime of life. In the 1960s, infections declined somewhat for the twenties generation, but increased for the fifties and sixties, producing two peaks in the demographic pattern. This is similar to the infection rate currently seen in developing countries.

The year 1970 saw substantial improvements in all age groups. In 1980, the peak disappeared for younger generations, and the infection rate has been steadily declining ever since. Currently, tuberculosis is at low epidemic levels among older people in both Japan and Okinawa.

(2) Outline of Tuberculosis Programs

Tuberculosis programs have three stages: discovery, treatment and prevention. There are qualitative differences between the measures taken at each stage during the fifties and sixties when tuberculosis was rampant and today when it has declined. This paper focuses on Okinawa tuberculosis programs during the first half of the postwar period.

1) Discovery

Like elsewhere in Japan, the primary means of discovery in Okinawa is grouped testing for residents who have no respiratory symptoms. When the health centers were established in 1951, chest X-ray machines were installed, and in 1955 communities began to introduce movable indirect

cameras to take chest pictures. This enabled testing to be performed by local health centers. Group testing covers: 1) general public (district) testing, 2) school (elementary and middle school) testing, 3) testing of those exposed to the disease, and 4) workplace testing.

The general public testing is conducted for adults in groups of 100-500, which are assembled at public halls and other locations. Those requiring secondary testing undergo direct photography, cross section photography and sputum testing at their local health center. School testing conducts tuberculin reaction tests for all students, with chest X-rays taken for those showing positive results.

In 1960, testing discovered tuberculosis suffers at a rate of 1.2% for the general public, 0.1% for elementary school, 0.3% for junior high school, 0.96% for work places and 0.95% for those exposed. Note that the general public testing and testing of those exposed produced similarly high rates of tuberculosis discovery.

Discovery rates declined for subsequent testing. In 1970, general public testing had a discovery rate of approximately 0.2%. In 1980, the priority shifted from general public testing to testing of those exposed to tuberculosis sufferers.

Chest X-rays were an effective method of discovery when there were large numbers of tuberculosis sufferers because they were able to test large groups of people at once. They were also effective in discovering the disease while still in the early stages. However, this method requires supplies of electric power, X-ray photography units, vehicles to transport the equipment, and developing facilities. It also requires trained technicians to take the X-rays and trained physicians to read them, making it a costly alternative.

Sputum smears are another means of discovery and were used in Okinawa before the group testing system was in place. Later, residents who were unable to undergo other testing for whatever reason were visited by public health nurses, who distributed sputum containers to those showing symptoms, with samples tested at the health center. This method discovers patients at more advanced stages of the disease than the indirect chest X rays, but the equipment and staff training for sputum smears is far more economical. Sputum testing is also important because of the need to use results in diagnosing tuberculosis and evaluating treatment.

It is therefore potentially effective to build a screening system based on these methods rather than chest X-rays as long as there is a system in place for timely testing of all potential sufferers. Many countries do in fact use this method.

2) Treatment

In 1951, a study of the entire population of a northern rural village (Yabeson) was conducted in order to measure the tuberculosis rate of on the Okinawa mainland. This was followed up with a survey of 10,000 residents of Okinawa Island, Miyako and Yaeyama. The studies estimated patients requiring treatment at 1% of the population. Okinawa then had a population of 700,000, indicating 7,000 patients. At the time, tuberculosis sanatoriums only had 240 beds, a stark illustration of the

lack of medical facilities in the prefecture. One program to overcome this was to designate health centers as treatment institutions and to use public health nurses to conduct home treatment. Tuberculosis sanatoriums also increased their bed turnover rates by examining inmates and limiting stays.

Health centers were established at a rate of approximately one per 10,000-20,000 population, with public health nurses stationed on outlying islands and in remote villages under the supervision of the offices. Public health nurses stationed in remote locations visited tuberculosis patients who had been diagnosed by the health center and supervised their convalescence. At times they also oversaw sputum smears and administered drugs.

By 1960, the number of tuberculosis beds had increased to more than 600, but the prefecture was still unable to provide treatment for the approximately 3,000 new patients scene each year (of which approximately 10% showed serious symptoms). Some patients with positive smears were referred to other sanatoriums around Japan. Between 1962 and 1983 (22 years), approximately 2,800 patients were sent outside the prefecture, the equivalent of 8% of the 35,000 new tuberculosis sufferers registered in Okinawa prefecture during that period.

3) Prevention

BCG vaccination is performed in Japan today as a part of the extended program for inoculation (EPI), just as it is in many developing countries. Okinawa did not use BCG vaccinations immediately after the war. The benefits of BCG vaccinations were known in the 1950s, but the United States, which had few tuberculosis sufferers, had no BCG vaccination system. There were also problems with budgets and administrative systems at the time. When the 1963 tuberculosis survey showed large numbers of sufferers in their twenties, it prompted the start up of BCG vaccination for high school students in 1967, and the scope of vaccination subsequently expanded to down to infants. Prior to the introduction of infant BCG vaccinations in Okinawa, screening was performed with the tuberculin reaction tests, with elementary and junior high school students showing positive results than undergoing chest X-rays.

4) Support for tuberculosis programs

a) Tuberculosis prevention law

The Provisional Guidelines for Tuberculosis Prevention Programs of 1954 and their replacement, the Tuberculosis Prevention Law of 1956, gave Okinawa legislation for programs against a single disease, tuberculosis, at a relatively early stage. This legislation provided comprehensive tuberculosis prevention and treatment programs for all age groups from infants to adults and assigned clear responsibilities for implementing these programs. While the Ryukyu Government Tuberculosis Law was based on the Japanese tuberculosis prevention, it is distinguished by several factors, including explicit provisions: 1) authorizing public funds to cover the entire

amount of tuberculosis treatment costs, 2) authorizing public funds to pay for tuberculosis testing, and 3) obligating the heads of companies, schools, institutions and municipalities to perform tuberculosis testing. Budgets were strained at the time, but to the law provided for necessary funding and systematic training of the manpower required, and in that was extremely significant.

b) Private organizations

Health centers worked with a municipal government, the heads of neighborhood associations, women's groups, youth groups and senior citizens' groups to conduct joint health education programs and encourage tuberculosis testing.

The Ryukyu Tuberculosis Prevention Society was established in 1953 to work in partnership with the Ryukyu Government on tuberculosis prevention. Its activities included education, publicity and group testing. In 1956, recovered patients took the lead in organizing the Okinawa Patient Association to provide support for patients in treatment, cooperation for tuberculosis testing and publicity activities for tuberculosis prevention. In fact, this group also provided day-to-day life-style supervision and treatment consultations for patients. The Okinawa Patient Association eventually developed into an officially incorporated nonprofit organization and established the "Center for Assistance and Supervision of Recovered Tuberculosis Patients" to aid tuberculosis patients in returning to society after treatment.

c) Specialists and researchers

In 1953, G.S. Pesquera, a doctor with the United States Army, provided a conceptual framework for a comprehensive tuberculosis program that included treatment, rehabilitation, welfare, public education, research and broad statistical attracting. This became the foundation for current tuberculosis programs. The government of Japan also provided in assistance by seconding Ministry of Health and Welfare specialists to Okinawa to alleviate the shortage of tuberculosis specialists in the prefecture. As part of this, tuberculosis specialists at the research center of the Tuberculosis Prevention Society conducted tuberculosis surveys in 1963, 1968 and 1973. In 1976, Okinawa established a surveillance system to monitor tuberculosis cases, treatment and programs in each health center district. This was the first program of its kind in Japan.

(3) Lessons from Postwar Tuberculosis Programs

The three systems are necessary to support tuberculosis programs: 1) a system for resident consultation, testing and treatment, 2) a system to report information on patient discovery and treatment, and 3) a system to educate residents, community leaders and health-care staff.

Three reasons that Okinawa was able to effectively combat tuberculosis in spite of the inferior health care environment of the postwar period was that it had these three systems in place and functioning under the leadership of the health centers. Health centers serve as more than just testing and treatment

institutions. They also register sufferers and therefore play a central role in statistics keeping. The tuberculosis testing associations established within the health care rates in an effort to counteract the shortage of tuberculosis beds at the time. These years, the public health centers and tuberculosis testing associations were instrumental in the standardization of treatment and shortening of convalescence periods.

Of special note in the consultation, testing and treatment system is the role of public health nurses. Public health nurses were stationed throughout the prefecture, including remote islands and villages ("health posts"). These health posts did not have special treatment facilities, merely consultation rooms and offices, but were able to manage the administration of drugs because tuberculosis treatment methodologies had been formalized and the majority of patients were younger people with a few complications. Public health nurses also visited the homes of patients who had suspended treatment, supervising their health and drug administrations. Tuberculosis is a disease that requires long periods of time to treat, and support for continued and complete treatment plays a key role in preventing the spread of the disease to new patients. Public health care nurses made it possible for the residents of remote locations to receive a certain level of tuberculosis treatment at a time when health-care institutions were lacking. This has important lessons for tuberculosis programs in developing countries.

Keywords: Health center, Public health nurse, Tuberculosis outpatient treatment (home treatment), Tuberculosis prevention law

REFERENCES

<Japanese>

Anti-Tuberculosis Association, Okinawa Branch (1978) *Ryukyu kekkaku yobou kai•kekkaku yobokai okinawa shibu 25 nen no ayumi [25 Year History of Anti-Tuberculosisi Association, Ryukyus and Okinawa Branch]*.

Aoki, M. (1986) *Okinawa no kekkaku, souritsu 30 shunen kinenshi [Tuberculosis in Okinawa, 30th Festschrift]*. Anti-Tuberculosis Association, Okinawa Branch.

Bureau of Health and Welfare Department. *Okinawa no kekkaku wo kataru (zadankai) kekkaku no genjo 1960-1961 [Round Table Discussion of Tuberculosis in Okinawa 1960-1961]*. Government of the Ryukyu Islands

Environment and Health Department Prevention Division (1981) *Okinawa no sengo no hokenjo no ayumi [History of Postwar Health Centers in Okinawa]*. Okinawa Prefecture.

Hirayama (ed.) (1987) *Okinawa no iryo to hoken [Medical and Health Care in Okinawa]*. Tokumeikai.

Ishikawa, N. (1994) *Sekai no kekkaku mondai to nihon no koshu eisei [The Global Tuberculosis Problem and Japanese Public Health]*. The Journal of Public Health Vol. 58:1-4.

Ishikawa, N. (1999) *Nihon no kekkaku taisaku ni manabu mono [Lessons from Japanese Tuberculosis Programs]*. The Journal of Public Health Vol. 63: 170-174.

Kamichi, A. (1974) *Kekkaku jittai chosa ni tsuite* [*Survey of Tuberculosis*. Records of the Okinawa Prefecture] Public Health Society 45-47.

Mori, T. (1971) *Okinawa ni okeru kekkaku no ekigaku bunseki [Immunological Analysis of Tuberculosis in Okinawa]*. Tuberculosis Vol. 46:357-364.

Public Health Division, *Health and Welfare Departmet (1991) Hoken jo no ayumi [History of Health Centers]*. Okinawa Prefecture.

Public Health Section, Welfare Bureau (1991) *Hokenjo no Ayumi (Hoken jo 10 shunen kinen shi) [Health Centers in Okinawa, 10th Anniversary]*.

Sunagawa, K. (1984) *Okinawa ken no kekkaku taisaku [Tuberculosis Programs in Okinawa]*. The Journal of Public Health Vol. 48:547-555.

Teruya, H. (1987) *Sengo Okinawa no iryo-watashi no ayunda michi kara [Medical Care in Postwar Okinawa: The Path I Took]*. Medical Friends Sha.

Tokushu: Okinawa no koshu eisei katsudo [Feature: Public Health Activities in Okinawa]. Journal of Public Health Vol. 35: 65-118. 1971.

Toyama, K. (1989) *Sengo Okinawa no kekkaku taisaku urabanashi [Untold Stories of Tuberculosis Programs in Postwar Okinawa]*. Anti-Prevention Association, Okinawa Branch.

Yonahara, S. (1983) *Okinawa no hokenfu [Public Health Nurses in Okinawa]*. Hokendojinsha.

<English>

WHO (1998) Tuberculosis Control as an Integral Part of Primary Health Care.

Box 5: Pharmaceuticals Storage at Public Health Nurse Stations

Public health nurses suffered from extreme lack of medical facilities, equipment and supplies. They were, however, charged with all drug treatment of registered tuberculosis patients beginning in 1954. Public health nurses worked directly with patients in their homes under the supervision of the head of the health center. They also provided drugs at the public health nurse station. This developed into Okinawa's unique "home treatment system."

The drug storage rooms and shelves at the public health care stations contained boxes of many different sizes and shapes. Nurses were responsible for storing and managing the pas, aina, stomai and other drugs administered to tuberculosis patients convalescing at home, as well as the vitamin supplements given to anemic pregnant women. In addition to pharmaceuticals proper, they were also required to store the skim milk issued to tuberculosis patients. Nurses provided patients with one box of skim milk a month at the time of drug administration. Nurses had full responsibility for disbursements, and their drug inventory ledgers from the time provide a great deal of insight into tuberculosis patients within their territories.

Public health nurses were trained in ways to cook with skim milk so that they could make it easier for their patience to ingest, and were also charged with supervising their patients' nutrition. Some patients, knowing that skim milk was nutritious, were still unable to drink all they were supposed to and would developed diarrhea and if they tried. Among them were some who sold the milk to earn money for food. To prevent patients from selling skim milk, nurses numbered the boxes, stamped them with the official seal of the health center, or delivered the milk with the box already opened.

Nurses were kept extremely busy trying to manage everything from drugs to skim milk. This work continued even after the return of Okinawa to Japanese rule.

(Nakazato)

3-6-4 Hansen's Disease Programs

Seisho Higa
Director,
Chuou Health Center, Okinawa Prefecture

(1) Introduction

Before an appropriate treatment method had been established for Hansen's disease, discovery required that a patient leave his or her family and live a life apart from the rest of the community. Local residents often refused to assent to protection and housing programs run by religious groups and government agencies, and sufferers were often persecuted.

With nationwide support and the efforts and cooperation of interested volunteers, the Okinawa Airakuen was established in 1931 and the Miyako Nanseien on the northern part of the Okinawa mainland in 1938. Hansen's disease sufferers were protected and housed here.

(2) Hansen's Disease Programs Immediately Following World War II

On the Japanese mainland, the Leprosy Prevention Law of 1931 required patients to be isolated, concentrated and treated. In Okinawa, which was occupied by the United States military and administered separately from Japan, military orders and special accommodations also established a policy of isolating sufferers.

In July 1953, the U.S. Army headquarters and USCAR asked Dr. Doull of the Leonald Wood Memorial Foundation of the Philippines to study "whether the Hansen's disease situation on Okinawa posed a threat of infection to U.S. military personnel and their families stationed on the island." Dr. Doull advised that Hansen's disease was an issue for public health programs and should be handled at the level of ordinary health administration, preferably by the community health center, just as programs for other diseases. This was the first time such advice had been received.

According to report by Saigawa, the number of patients in 1950 was 96 (infection rate of 13. 7 per hundred thousand population), 16 of whom between 0-14 years of age; by clinical type, 49 had L form and 47 T form.

(3) The "Hansen's Disease Prevention Law"

The Okinawa Leprosy Prevention Society, a private institution, was established in 1958 in order to smooth the flow of aid from the government of Japan to the Ryukyu Government and promote programs to prevent the outbreak of Hansen's disease.

In 1961, the Ministry of Health and Welfare sent a technical officers, Nanba and Takizawa to Okinawa to conduct a fundamental study of Hansen's disease aid. Their report advised home treatment be employed for non-infectious patients because of the large numbers of younger patients, the limited

number of beds and the extremely limited number of doctors.

The "Hansen's Disease Prevention Law" was promulgated on August 26, 1961. The law allowed recovering patients to be discharged, provided welfare programs for discharged patients, established monitoring for discharged patients, and allowed outpatient treatment for non-infectious patients. While there was some criticism of the law for being inadequate in certain aspects, it was a revolutionary step in comparison to the mainland's "Leprosy Prevention Law," which required isolation of Hansen's disease sufferers until its abolishment in April 1996. Even prior to this, the Yaeyama Health Center had begun home treatment in April 1959 because Yaeyama lacked Hansen's disease treatment facilities. This continued until the last patients were cured in 1994.

(4) Coordination between the Okinawa Leprosy Prevention Association, the Government of Japan and the Ryukyu Government

In 1960, the Okinawa Leprosy Prevention Association began to receive assistance from the Southern Fellows Support Association to build clinics that would promote home treatment. In 1964, it began to test residents in an effort to discover untreated patients, and to hold an annual "Hansen's Disease Prevention Week." The Association also had welfare programs, for example job-training to assist in the rehabilitation of an increasing number of discharged patients after the introduction of Promin treatment in 1950.

After repeated discussions with the Health Bureau and Education Bureau of the Ryukyu Government, the Ministry of Health and Welfare began in April 1967 to test the skin of schoolchildren with the cooperation of specialists from the mainland. In 1978, adults testing began in conjunction with testing for tuberculosis and degenerative diseases. The Okinawa Leprosy Prevention Association also used skin clinics to test the families of patients and identify new patients.

These efforts were effective. The number of new Hansen's disease patients peaked at 173 in 1967 (infection rate of 18.0) and declined thereafter., reaching 70 at the time of Okinawa's reversion to Japanese rule in 1972 (infection rate of 7.2) and 2 in 1998 (infection rate of 0.15).

(5) Summary

Okinawa had been beset by leprosy from before the war. After the war, it suffered from poverty, lack of medical staff and lack of medical equipment, but the Leprosy Prevention Association, a private organization, the USCAR, government of Japan, Ryukyu Government, WHO and patient associations effectively coordinated their efforts to deal with the sources of infection, promote home treatment, provide collective treatment, support patients' families and assist recovered patients in returning to society. This health policy has allowed large numbers of patients to lead happy lives as ordinary members of society and in that it is worthy of high praise.

Hansen's disease sufferers have endured many trials, but the number of new patients in the prefecture is virtually zero. In the near future, Hansen's disease will be treated just as any other infectious disease.

Keywords: Leprosy prevention law, Patient isolation, Leprosy Prevention Society, Hansen's disease prevention law, Home treatment, Eradication of source of infection, Skin testing

REFERENCES

<Japanese>

Amakusa, S. (ed.) (1968) *Kaien 30 shunen kinen shi [30th Anniversary Memorial]*. Okinawa Airakuen.

Saikawa, K. (1999) *Hansen byo seisaku no hensen [History of Hansen's disease Policy]*. Okinawa Prefecture Hansen's disease Prevention Association.

3-6-5 Parasite Programs

Tadashi Nakasone
Director,
Hokubu Health Center, Okinawa Prefecture

(1) Epidemic Parasite Infections

Parasites within the intestines attach to the digestive tract, where they lay their eggs, which are then discharged with fecal matter. The eggs attach themselves to the soil and to vegetables. Ascaris waits in egg form for the opportunity to invade a new host; hookworm grows to larva stage as it waits for its opportunity. Eggs and larvae are taken in orally along with food and beverages; they hatch and grow in the small intestine. Some hookworm varieties also invade directly through the skin. These parasites are generally referred to as "soil transmitted parasites."

Before the war and for a brief period after the war; living environments in Okinawa were poor, no sewers were available, and most night soil was used as fertilizer. It was also common for people to work the fields barefoot, so parasitic infections were particularly endemic to rural, agricultural regions. Studies prior to the war reported ascaris, pinworm, strongyloides, Taenia solium and paragonimus westernas among the human parasites found in Okinawa Prefecture.

A study by the U.S. military Medical Research Center in 1949 found that 48.1% of mainland Okinawa residents carried parasite eggs, 35-75% of school-age children. The U.S. Military Government distributed anti-ascaris drugs to some elementary schools, but the program was not sufficient. The five health centers established in Okinawa in 1951 and the Ryukyu Health Research Center established in 1952 placed anti-parasite programs along side tuberculosis, malaria, filaria and venereal disease. However, other diseases were given priority and no full-fledged anti-parasite program ever began.

In 1957, a joint study by the Institute for Infectious Disease the University of Tokyo and the Ryukyu Health Research Center of 1,135 residents of rural areas in southern Okinawa found positive results for 78.9% for hookworm, the 0.4% for ascaris, 10.3% for strongyloides and 2.4% for trichuristricura. When limited to those of working age, the rate was an extremely high 94.5%. Only 15.5% tested negative for all parasites.

(2) Zero Parasites Campaign

1) History

The Joint study by the Institute for Infectious Disease the University of Tokyo and the Ryukyu Health Research Center underscored the epidemic proportions of parasite infections in rural Okinawa and the need for programs to combat them. In 1961, a pharmacist established a private "Ryukyu Parasite Testing Center" that tested stool samples with the cooperation of technicians from health

centers and the Health Research Center. The Center, with the cooperation of public and private physicians, also visited schools, municipalities, women's groups and other organizations to provide health education and raise resident interest in parasitic diseases. Later, in 1963, the testing center expanded into an incorporated, nonprofit organization called the Okinawa Parasite Prevention Association, giving it a more solid base of activity.

As parasites became a social issue, the "Zero Parasite Campaign" was launched in 1965 to eradicate parasitic infections. The campaign had three focuses: 1) education about prevention of parasitic infections, 2) stool testing, and 3) drug treatment to eliminate parasites. The campaign was led by the private Parasite Prevention Association and run in cooperation with the mass media. The first campaign, which covered mainland Okinawa, began in 1965. A total of nine campaigns were conducted over a five-year period ending with the campaign at Minamidaito-mura. Each year, priority areas were selected and activities move forward in a planned, systematic fashion. The Zero Parasite Campaign was the first full-fledged mass campaign to be seen in Okinawa.

2) Highlights of the Zero Parasite Campaign

One of the things it set this campaign apart was the fact that it was led by a private group with a strong track record in this area. The other large-scale infectious disease programs on Okinawa--for example, the campaigns to eradicate malaria and filaria--were led by the government--either the Ryukyu Government, the U.S. Military Government or the government of Japan. The parasite campaign, however, was led by the private Okinawa Parasite Prevention Association.

The second distinguishing feature of the campaign was its use of the publicity functions of the mass media. Local newspapers, radio stations and television stations joined the campaign and provided publicity activities for residents. For example, a long running radio series called "The Path to Zero Parasites" was produced and broadcast, and contributed to the success of the campaign.

Third, the campaign emphasized providing residents with information. Local communities, schools, doctors and nurses (public health nurses) conducted nearly 250 health lectures and movie screenings a year. At these times, they also discussed the progress of the "Zero Campaign," and the results from stool tests. This effort to share the results of the campaign increased resident awareness of health and encouraged residents to participate in the campaign.

3) Budget

One of the stated goals of the "Zero Parasites Campaign" was to encourage "municipal governments to bear the cost of treating parasite problems." The mass media ran broadcasts encouraging municipal governments to include stool-testing costs in their budgets.

Midway through the campaign, in phases for five and six, local "Parasite Prevention Conferences" were held, and these also urged municipal governments to provide budget for parasite programs.

The result of these efforts was that 80% of the municipalities on mainland Okinawa allocated

budget for parasite programs. Stool testing was done by private institutions with expenses paid for by municipal governments; treatment was provided by health centers free of charge. At the time, the law gave primary responsibility for health programs to the Ryukyu Government; the health centers and municipalities had no legal responsibility to implement programs. Their allocation of budget for parasite programs was thus an extremely innovative step.

In 1967 and 1968, the Ryukyu Government allocated budgets of $7,400 and $8,400 respectively for parasite programs. By the end of the campaign, in 1969, budgets had expanded dramatically to $19,000 and $27,000, in part thanks to an increase in U.S. aid. This too was one of the achievements of the campaign.

4) Role of researchers, testing institutions and paramedical staff

From the 1950s onwards, studies by the Institute for Infectious Disease, the Nagasaki University Institute of Tropical Medicine and Kagoshima University School of Medicine provided academic proof of the scale of the parasite problem and the need for countermeasures. These institutions also provided frequent technical training for technicians at the Health Research Center and the health centers. In 1964, the year before the campaign began, a "parasite symposium" was held at the general meeting of the Okinawa Medical Association. The campaign was not, therefore, just a spur of the moment event, but a program grounded in clear need and solid academic rationale.

During the course of the campaign, cooperation was provided by the Nagoya Public Health Institute and the Japan Parasite Prevention Association, and their help in overseeing testing techniques provided significant impetus. Cooperation by local government and private doctors and testing technicians was also an important foundation for the campaign even though it was led by a private organization.

(3) Lessons from the "Zero Parasites Campaign"

Hookworm and ascaris are common soil transmitted parasites, effecting an estimated 1 billion people around the world. Hookworm is a particularly serious problem because it can cause anemia; the WHO estimates that it claims 60,000 lives a year. It also has a significant impact on productive activities. On average, a tuberculosis patient loses 200-400 working days, a hookworm patient will lose about 100. Mr. Chojiro Nagai of the Japan Parasite Prevention Association visited Okinawa prior to the campaign and estimated that hookworm alone lost Okinawa $30 million a year, roughly the equivalent of the Ryukyu Government's budget. This underscored the need for countermeasures, he said.

How can the achievements of the "Zero Parasites Campaign" be used by developing countries in fighting parasites? The campaign had six steps which were repeated again and again in order to identify the targets (parasite egg carriers): 1) public education about parasite infections, 2) testing (stool testing), 3) explanations of results, 4) treatment of those testing positive, 5) retesting, 6) further education and treatment based on local data. Particular emphasis should be placed on the fact that testing technicians

and other paramedical staff did not merely concentrate on their areas of specialty, but also attended local meetings and reported on their findings, confirming the significance of results in discussions with residents and working together with residents to plan the next stage of the campaign. This enabled communities to learn how to work on their own to solve health problems and reconfirmed the importance of community-organized activities.

Anti-parasite programs can also develop into programs to improve living environments, especially those factors that lead to infection (in Okinawa, the use of night soil as fertilizer and the practice of tending fields barefoot), toilet facilities and safe drinking water. As part of the "Zero Parasites Campaign" the USCAR provided aid for the installation of improved triple-tank toilets in all areas, which helped provide a foundation for more sanitary living environments. In China, there have been examples of similar campaigns conducted in conjunction with mother and child health care activities. In other words, efforts to improve life styles and environments from a comprehensive perspective can be instrumental not only in dealing with parasites but also in combating infant diarrhea and other killing diseases in developing countries.

If there are any reservations about applying this program in developing countries they would be the need to accurately assess local priorities, including resident needs for parasite programs. In addition, developing countries should also confirm the costs of the programs and their ability to continue them. Most resident screening involves very little pain or economic burden for residents, but there needs to be a system in place that will enable testing to continue every year. It may not be a simple matter for developing countries to establish testing facilities, hire testing staff, and fund stool testing in addition to treatment drugs. If treatment has priority, it is conceivable that, where sample testing warrants, all residents of epidemic areas could be given drugs. The important point is to adapt the "Zero Parasites Campaign" to local conditions.

Keywords: Hookworm, Ascaris, Parasite Prevention Association, Mass campaign

REFERENCES

<Japanese>

Bureau of Health and Welfare Department (1962) *Hokenjo no Ayumi [History of Health Centers: 10 Year Anniversary]*. Government of the Ryukyu Islands.

Ibid. (1991) Hokenjo no Ayumi *[History of Health Centers]*.

Environment and Health Department, Prevention Division, Okinawa Prefecture (1981) *Okinawa no sengo no hokenjo no ayumi [History of Postwar Health Centers in Okinawa]*.

Hirayama (ed.) (1987) *Okinawa no iryo to Hoken [Medical and Health Care in Okinawa]*. Tokumeikan.

Okinawa Pharmacists Society (1997) *Okinawa ken yakuzaishi kai shi [History of the Okinawa Prefectural Pharmacists Society]*.

Okinawa Health Service Association (1992) *Yobo igaku kyokai kinen shi [Commemorative Journal of the Society for Preventive Medicine:19 Years of History]*.

Shin nettai kansen syou gaku [Feature: Public Health Activities in Okinawa]. Koushu eisei *Journal of Public Health*. Vol. 35: 65-118. 1996.

Takeda, (ed.) (1996) *Shin nettai kansen syo gaku [New Tropical Epidemiology]*. Nankodo.

3-6-6 Anti-Malaria Measures

Hachiro Sakiyama
Director,
Koza Health Center, Okinawa Prefecture

(1) Situation before Postwar Anti-Malaria Campaign

While it is unclear when malaria first appeared in the Ryukyu Islands, by the pre-war years the disease had become endemic, with malaria epidemics occurring on a regular basis. Known as "yaki" or "fuchi", malaria was dreaded by local residents. The situation was particularly grave on Yaeyama and Miyako, where entire villages were wiped out. In 1890, Okinawa Prefecture established a branch of the Okinawa Hospital in Yaeyama and launched a counter-attack on the disease. A malaria control office was set up in Yaeyama in 1921, followed in 1926 by the stipulation of malaria control regulations and the institution of various countermeasures, but these efforts failed to produce satisfactory results. Up until the Pacific War, 700 to 2,300 people (two to seven percent of the population) were contracting malaria every year. Miyako also had its share of malaria victims, although not to the extent of Yaeyama; details, however, are unknown. On Okinawa Island itself, because malaria was restricted to a few cases in Kunigami in the north, no particular countermeasures were taken.

The evacuations triggered by the Pacific War, which began in 1941, pushed people into malarial zones and immediately sent the number of malaria victims skyrocketing. This "war malaria" struck 160,098 people on Okinawa Island, killing 660 (1946), with 33,500 infected and 428 dead in the Miyako Islands (1947), and 16,884 infected and 3,674 dead in the Yaeyama Islands (1945)(Table 3-4). In the Yaeyama Islands in particular, more people were killed by malaria than outright by the war.

(2) Development and Performance of Anti-Malaria Measures

1) Overview of anti-malaria measures

A full-scale malaria control campaign was mounted in the Yaeyama Islands, addressing both sources of infection (dosing victims with Atebrin, etc.) and mosquito carriers through the use of the pesticide DDT. Regulations for cracking down on and eradicating malaria were promulgated in 1947, adding weight to the anti-malaria drive. The number of victims plunged to 17 in 1949, and the disease seemed likely to disappear. However, plans for migration from Okinawa Island and elsewhere brought people into infected areas, again increasing malaria incidence, with the figure returning to the pre-war level of 2,221 in 1956. This was known as "migrant malaria" (Table 3-4).

Anti-malaria campaigns based on regulations and other government directions were also pursued on Miyako and Okinawa Island. As a result, there have been virtually no cases of malaria on Okinawa Island since 1952; in the Miyako Islands, however, around 500 people were still infected as at 1954.

The Ryukyu Government addressed the situation by revamping its traditional malaria control measures and introducing a new campaign based on the Wheeler Plan, directed by Dr. Charles M. Wheeler, an entomologist working for U.S. Armed Forces Medical Research Unit 406. Where the goal had traditionally been simply to control malaria, the Wheeler Plan aimed to eradicate the disease. Dr. Wheeler adopted the indoor DDT residual spraying method*, which focused on the habits of the carrier mosquitoes, and succeeded in paring the number of malaria cases down to five in 1961, after which endemic malaria disappeared entirely.

Table 3-4 Malaria Cases and Deaths by Year (1945-1962)

Year	Okinawa Island		Miyako Islands		Yaeyama Islands	
	No. of cases	No. of deaths	No. of cases	No. of deaths	No. of cases	No. of deaths
1945	–	–	–	–	16,884	3674
1946	160,098	660	7,985	179	9,050	128
1947	120,560	407	33,500	428	6,594	74
1948	31,860	196	7,578	120	799	79
1949	6,456	74	406	15	17	8
1950	1,202	20	165	2	35	–
1951	286	7	55	1	74	3
1952	2	2	102	5	405	7
1953	2	1	43	4	1,610	13
1954	–	–	500	–	2,030	14
1955	–	–	313	–	1,865	7
1956	1	–	29	–	2,211	4
1957	2	–	56	–	1,730	3
1958	1	–	54	–	370	2
1959	–	–	1	–	58	–
1960	–	–	–	–	4	1
1961	–	–	–	–	5	1
1962	–	–	–	–	–	–

Source: Okinawa no Igaku (Okinawa Medicine), edited by Moriteru Inafuku

2) Basic methods used in countermeasures

a) Measures addressing sources of infection

* Blood tests to determine persons carrying protozoans and those infected with malaria
* Use of Atebrin for insect carriers and malaria patients

b) Measures addressing infection paths

* Indoor spraying with oil-based DDT
* Indoor DDT residual spraying (in line with the Wheeler Plan)
* Spraying DDT powder over rice fields, wetlands, etc.
* Eliminating mosquito habitats such as puddles, underbrush and weedy patches around

* To suppress infectious diseases carried by mosquitoes, such as malaria and filaria, an indoor residual spraying technique was invented based on the habits of mosquitoes, namely the tendency of carrier mosquitoes to rest briefly inside houses on the surface of walls and clothing before flying back outside.

residential areas

c) Measures addressing persons at risk

* Preventative medicine given to those living in malaria zones
* Preventative medicine given to those traveling or staying in malaria zones

3) Education and awareness-raising methods

Efforts were made to increase public awareness through lectures, poster and leaflet distribution, and use of mass media channels. DDT spraying was handled by village-appointed sprayers trained in spraying methods at local health-care centers. Locally-stationed public health nurses were involved in administering and supervising the administration of Atebrin. Thanks to the understanding and cooperation of local residents, smooth progress was made in addressing the disease.

4) Effects of anti-malaria measures

After the Wheeler Plan was instigated in 1957, the number of malaria incidences steadily decreased, with no cases emerging since 1962 other than "imported" malaria.

5) Budget, manpower, organization, etc.

Until the Wheeler Plan was launched, no budget provisions were made by the U.S. government, but as of 1957, a special migration financing fund was set up. The U.S. government allocated more than $160,000 to this fund over the seven years between 1957 and 1963.

After the Ryukyu Government was established in 1952, health-care offices became the main force behind anti-malaria measures. A malaria control division was set up and staffed within the Yaeyama Health-Care Office in 1956, and this pushed strongly ahead with the Wheeler Plan.

(3) Reasons for the Success of Anti-Malaria Measures and Lessons to be drawn

1) Change in local attitudes: Most local residents thought malaria was unavoidable, but public education and proof of the efficacy of measures being taken changed this attitude, eliciting greater local cooperation.
2) Local participation: Broad-ranging local participation in, for example, hygiene education, environmental improvements, spraying and blood tests, was a major factor behind the success of anti-malaria measures.
3) Measures such as the elimination of carrier mosquitoes and drug treatment were grounded in science.
4) Adequate funds, manpower and other resources were injected intensively into countermeasures over a short period of time.
5) Where persons susceptible to malaria move into affected zones, they are easily infected, causing

an epidemic. With carrier mosquitoes still in existence even today, careful surveillance will remain a necessity.

Keywords: War malaria, Migrant malaria, Wheeler Plan, DDT indoor residual spraying, Local participation

REFERENCES

<Japanese>

Inafuku, M. (1995) *Okinawa Shippeishi [Disease in Okinawa]*. Daiichishobo.

Ohama, N. (1968) *Yaeyama no Malaria Bokumetsu [Elimination of Malaria from Yaeyama]*.

Prevention Division, Environment and Public Health Department, Okinawa Prefecture (1981) *Okinawa Sengo no Hokenjo no Ayumi [Postwar History of Okinawa's Health Centers]*.

Research Center of Comprehensive Medicine attached to Graduate School of Medicine, University of the Ryukyus. *Okinawa no Rekishi to Iryo [Okinawa's History and Medical Care]*. Kyushu University Publishing Association.

3-6-7 Anti-Filaria Measures

Hachiro Sakiyama
Director,
Koza Health Center, Okinawa Prefecture

(1) Situation before Postwar Anti-Filaria Campaign

While it is unclear when filaria first came to Okinawa, a filarial fever called "kusa" or "kusafurui" was recognized many years before it was realized that the disease was transmitted by mosquitoes. Surveys and countermeasures were instituted from the Meiji period onward, but no basic control methods were established. A prefecture-wide survey was conducted in the late 1920s, revealing the widespread prevalence of filaria in the prefecture.

According to survey results between 1949 and 1964, filaria had permeated 8.5% of Okinawa Island's population, 13.8% in the Yaeyama Islands, and 30.0% in the Miyako Islands, in some areas close to 40%. There was an 8.9% incidence among students at the University of the Ryukyus, while the disease was particularly prevalent among senior and junior high school students. This high rate of incidence among the younger generation suggests that rather than being the sequela of the pre-war version, a new infection had emerged. While filaria does not have a high mortality rate, it develops steadily to the point of affecting a person's health and can also cause sequela such as elephantiasis, scrotal edema, and chyluria. Swift action was therefore required.

(2) Development and Performance of Anti-Filaria Measures

1) Development of anti-filaria measures

Drawing on a preliminary survey conducted 1952-64, an anti-filaria campaign was mounted in the Miyako Islands in 1965 based on the Outline of Filaria Control Measures. The Ryukyu Health and Welfare Department, Miyako Health-Care Office, Ryukyu Hygiene Research Institute and local filaria control councils were each assigned roles (Figure 3-3), with the government, research institutions and local residents working together to address the issue. Similar efforts were later launched on Yaeyama and Okinawa Island modeled on the Miyako method.

The number of larva carriers subsequently declined, with no incidences since 1978. Filaria is therefore considered to have been eradicated entirely, but sequela such as chyluria are seen from time to time.

2) Basic methods used in countermeasures

a) Measures addressing sources of infection

* Blood tests to determine persons carrying protozoans

A 30mm^3 blood sample was taken from a certain number of people and 10mm^3 each used to create three parallel samples. The number of filaria larvae in each trace was calculated, and the frequency and extent of side-effects predicted.

* Administration of medicine to filaroid hosts (on-site administration)

0.3 grams of Supatonin (in the case of adults) was given once a day for six days in two cycles. The Supatonin was administered at community centers every evening after the evening meal, with lessons given on these occasions on Supatonin side-effects.

b) Measures addressing infection paths

* Indoor spraying with oil-based Malathion
* Evening oil-based Malathion dusting
* Elimination of filaria habitats
* Pesticide spraying in filaria breeding grounds

3) Education and awareness-raising methods

a) Raising awareness through a mass campaign

With the cooperation of the mass media, a campaign was launched across the prefecture before anti-filaria measures were taken, increasing public awareness and understanding.

b) Hygiene education

Before blood tests were conducted, lectures and photo exhibits were held in local community centers. Public servants and other local residents functioned as the task forces for these events, putting up posters, distributing leaflets, and setting up the community centers. Because the side-effects of medication given to filaroid hosts were explained beforehand, people could be prevented from abandoning the medication because of these effects, ensuring that the course was completed.

4) Organization and roles

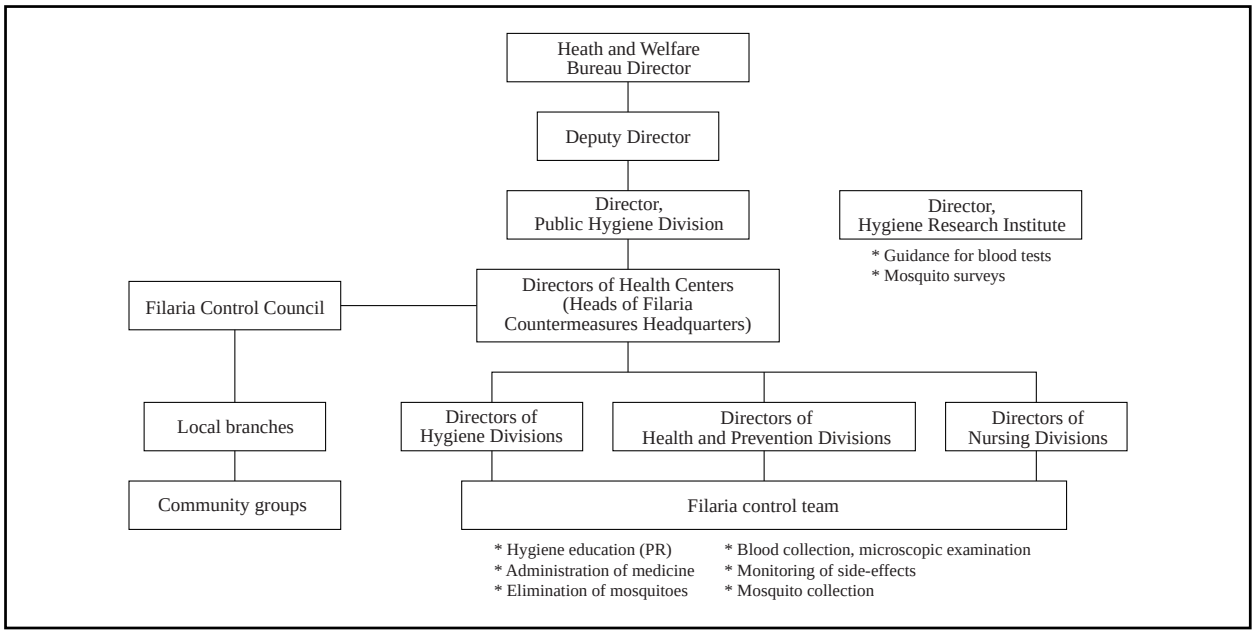
The various related institutions were organized to combat filaria based on the Outline of Filaria Control Measures. The prefecture supervised control work, secured funds and coordinated with other institutions.

Health Centers established control headquarters and undertook hygiene education, public relations, blood tests, microscopic examinations, medicine administration, monitoring of side-effects, mosquito collection and studies, and mosquito elimination, assisted by local government authorities and residents.

Local government authorities set up local branches of the Filaria Control Council, created lists of people requiring blood tests, notified the relevant individuals, coordinated with villages, and

otherwise cooperated actively in the work being undertaken by health-care offices.

Figure 3-3 Organization Chart for Filaria Control Program



5) Effects of filaria countermeasures

The Miyako Islands achieved a blood testing rate of almost 100%, while using on-the-spot dosage to ensure that those persons hosting larvae took their medicine brought the rate of persons testing positive down to 19.2% in the first round in 1965, 4.9% in the second round in 1966, and 2.1% in the third round in 1967-68. In 1969, the fourth round, the scale of the project was reduced to address persons who had tested positive the previous time, persons living in areas with a positive rate of 4% or more, and persons as yet untested, producing a positive rate of 0.3%, while dropped to 0.2% in the fifth round in 1970-71 (Table 3-5). Since 1978, no one has tested positive for filaria larvae.

Table 3-5 Trends in Blood Testing Rates and Filaria-Positive Rates in The Miyako Islands

	First round 1965	Second round 1966-67	Third round 1968	Fourth round 1969-70	Fifth round 1971
Target population	67,020	63,702	60,467	12,915	26,605
Number of persons receiving blood tests	66,333	63,702	60,453	12,691	26,238
Blood collection rate (%)	99.0	100	99.9	98.3	98.6
Number of persons testing positive	12,607	3,105	1,282	174	136
Positive rate (%)	19.2	4.9	2.1	1.4 (0.3)	0.5 (0.2)

Note: Figures within brackets indicate the ratio when the target population comprised all residents.
Source: Created from Filaria Boatsu Okinawa Hoshiki (Okinawa Method of Controlling Filaria), edited by Yoshitetsu Sunagawa

6) Budget, manpower, organization, etc.

The project was continued from 1965 through 1979 based on the Outline of Filaria Control Measures. The total project budget was 353.227 million yen, 176.044 million of which came from the Ryukyu Government, 106.2 million from the U.S. Government, and 74.974 million from the Japanese Government (using a conversion rate of 360 yen to the dollar).

An extremely large role was played in the project by the many temporary staff who were employed by the Miyako Health-Care Office, undergoing brief technical training (blood collection, microscopic examination, elimination of carrier mosquitoes, etc.) beforehand.

7) Role of research institutions, researchers, etc.

Important roles were also played by the preliminary surveys spearheaded by Nagasaki University; the theoretical guidance provided by Colonel Keagan, U.S. Armed Forces Medical Research Unit 406, and Professor Manabu Sasa, the Institute of Medical Science, the University of Tokyo; and the blood collection guidance, mosquito surveys and related guidance provided by the Hygiene Research Institute.

(3) Reasons for the Success of Countermeasures and Lessons to be drawn

1) Establishment of a filaria control methodology
   Steady progress in addressing the source of the disease through reliable treatment, and in addressing infection routes, including carrier mosquitoes
2) Securing the necessary human and material resources and capital
3) Organized action and local participation
4) Understanding and consensus of residents and cooperation from all organizations within the region, including towns and villages.
5) Establishment of control headquarters in Health-Care Offices, with the latter playing a key role in promoting the project
6) Intensive campaign conducted over a short period of time
7) Effective use of the local mass media

Keywords: Organized activities, Local participation, Mass campaign, On-the-spot oral dosage

REFERENCES

<Japanese>

Inafuku, M. (1995) *Okinawa Iryoshi [History of Medicine in Okinawa]*. Daiichishobo.

Research Center of Comprehensive Medicine, attached to Graduate School of Medicine, University of the Ryukyus. *Okinawa no Rekishi to Iryoshi [Okinawa's History and Medical Care]*. Kyushu University Publishing Association.

Sunagawa, K. (1988) *Filaria Boatsu Okinawa Hoshiki [Okinawa Method of Suppressing Filaria]*.

Yoshida, C. (1988) *Filaria Sosokyoku [Filaria Funeral March]*.

Box 6: Mass Campaign for Filaria Control in the Miyako Islands

On 13 January 1965, before the launching of the filaria control campaign, a commemorative ceremony was held in the U.S.-Ryukyu Culture Hall in Taira City. Japanese, Americans and Okinawans gathered under the same roof for this event, which was attended by all local towns and villages and many local residents. The platform full of Japanese, American, Okinawan and local representatives was a magnificent sight. With the American love for ceremony, the representative of the U.S. civilian government handed over to the director of the Filaria Control Headquarters (Director of the Miyako Health-Center) a wooden key close to one meter long, wound with red and white cloth and decorated with ribbons. His action was greeted with enormous applause. This was the "key to success" for the anti-filaria program.

The ceremony was followed by a parade around the entire island, with the effectiveness of the organizational set-up and build-up campaign conducted through the mass-media evident in the excitement and sense of expectation which could be felt from the island residents thronging the roadside. Vehicles from the local authorities, towns and villages also took part in the parade, as well as a pickup bought especially for spraying, and more than 20 motorcycles bought for mosquito surveying, creating the largest spectacle in the island's history. News of the event filled local papers, stimulating great local interest.

Because of the poor traffic conditions of the time, the locals depended on three local papers for their information, and these papers were an integral part of their lives. Most people would get up in the morning and glance through their respective local paper, catching up on information and news from the day before. Blood collection schedules and regular filaria-related articles were vital in rousing the interest of local residents in anti-filaria activities. One important function of the Control Headquarters was therefore to ensure a constant feed of information through to the mass media.

Another particular feature of related PR activities was the cooperation and support provided by a Tokyo television station. Channel 12 created a film on filaria which was shown together with a lecture at villages scheduled to launch anti-filaria programs. It was still rare to see footage filmed locally, and spotting familiar scenes and faces on the screen was a big surprise in an era before television, creating enormous interest among local residents.

Extract from *Filaria Boatsu Okinawa Hoshiki* (Okinawa Method of Suppressing Filaria), Keitetsu Sunagawa, 1988

3-6-8 Measures against Leptospira

Ariaki Odo
Director,
Nanbu Health Center, Okinawa Prefecture

(1) Leptospira in Okinawa

In 1970, Leptospira was contracted on Izenajima, an island in the north of Okinawa with a population of 2,000 (3,200 at the time). According to Dr. Fujie, who was working at what was then the Izenajima Clinic, the first victim was a 47-year-old farmer who had had a high fever for a week and was complaining of pain in his joints. Subcutaneous hemorrhaging and jaundice were apparent.

A joint study team was immediately established, comprising Dr. Yoshio Fujie from the Izenajima Clinic, Ariaki Odo, Director of the Naha Health Center, and Chokei Yoshida, Director of the Prefectural Institute of Health and Environment. With the advice and guidance of the National Institute of Health (Mr. Akama, Director of the Leptospira Office), the team conducted epidemiology and environment surveys, while also educating islanders on hygiene and care in their living habits.

A serum study of the victims revealed the presence of Leptospira pyrogenes, previously unknown in Japan. A survey by the Prefectural Institute of Health and Environment on Leptospira pyrogene antibodies in the bodies of islanders indicated that around 50% of adult islanders were hosts to the parasite, with this rate increasing from the younger to the middle-aged generation. In other words, Isenajima Island was widely and heavily infected with the disease. A similar disease had occurred previously on the island, appearing after the victims had been in working rice fields in mid-summer (July-August).

Subsequent Leptospira pyrogenes cases numbered 47 in 1972, 21 in 1973, 16 in 1974, 43 in 1975, and 37 in 1976.

The only way of preventing infection was by vaccination, but because the usual Weil's disease vaccine seemed unlikely to be effective, the National Institute of Health was asked to develop a new vaccine. The pyrogenes vaccine was completed in 1977, and given to islanders twice, once in 1977 and again in 1978, effectively eliminating the disease.

Leptospira pyrogenes vanished from Okinawa ten years after the first case was recognized.

(2) Overview of Leptospira

Leptospira is an infectious disease whereby Leptospira spirocha afflict the entire body with an acute fever. Main symptoms include jaundice, bleeding and albuminuria. It is common among farmers and fishermen, who are frequently in contact with contaminated sewerage or rice-field water, and appears most frequently in summer and fall.

Pathogens include Weil's disease, Leptospira autumnalis Typus A, B, C, canine Leptospira,

pyrogenes, and Japonica.

The disease is contracted percutaneously when sewerage or rice-field water contaminated by the urine of usually mice, but also dogs, cows, horses, pigs and other animals carrying Leptospira spirocha, enters through broken skin. Oral infections occasionally arise as a result of imbibing contaminated foods and drinks.

In terms of clinical symptoms, the body passes through three stages: fever, jaundice and recovery.

1) Stage 1: Fever

   Incubation period: 5-7 days

   Appears suddenly in the form of chills, shivering and fever, with a high fever lasting five to 10 days.

   Headache, backache, muscular pain, extreme lethargy, loss of appetite, broken sleep, ill temper, vomiting, bloodshot eyes and sore calf muscles are apparent, with a rapid pulse rate compared to body temperature.

2) Stage 2: Jaundice

   Jaundice develops rapidly, with an evident tendency to hemorrhage, pinpoint subcutaneous hemorrhaging, oral cavity hemorrhaging, and blood in the urine. The amount of urine decreases, and bilirubinuria appears, with renal failure also sometimes occurring. Circulation failure leads to a rapid pulse rate and low blood pressure. Headaches, insomnia, slower tendon reflexes, and occasionally brain-related symptoms, meningitis and other nervous symptoms appear, and ill temper, vomiting, flatulence and other indigestion symptoms are also evident.

3) Stage 3: Recovery

   Symptoms gradually disappear, but total recovery takes some time.

   Despite a long clinical process, vaccination has a strongly preventive effect, as evidenced in the case of Izena Island.

REFERENCES

<Japanese>

Fujie, Y. *Shima Isha Yuntaku [Island Doctor Yuntaku]*. Hirugisha.

Sawae, Y. *Reputosupira-sho, naikagaku (dai 5 han) [Leptospira, Internal Medicine (Fifth edition)]*. Asakura Shoten.

3-6-9 Measures to Combat Adult Diseases in Okinawa

Tamiko Fukuyama
Director,
Ishikawa Health Center, Okinawa Prefecture

(1) Adult Diseases in Postwar Okinawa

Okinawa is unique in Japan in having been under the control of the U.S. Armed Forces for the 27 post-war years from 1945 to 1972. The social chaos immediately following the war, the deteriorating economic situation and the construction of permanent U.S. bases boosted the incidence of adult diseases. With the conclusion of the Korean War in 1951, as well as the emergence of the Vietnam War, at one point there were said to be around 20,000 women consorting with U.S. military personnel stationed in Okinawa. Notifications from designated hospitals indicate that 5,536 cases of venereal disease were recorded in 1953, 4,368 of which were gonorrhea, 912 syphilis. The great majority of cases were women, and most patients were in their 20s and 30s, with men generally contracting the disease from female hostesses, women from U.S. military personnel. There was a U.S. army base in Koza (the current Okinawa City), and around 5% of the blood donated to the blood bank for the Koza-Naha district tested positive for syphilis.

(2) Measures to Prevent Venereal Disease

In the chaos of the post-war period, a succession of special proclamations issued by the U.S. military government on venereal disease did little to improve the situation.

Concerned at the prevalence of venereal disease among U.S. military personnel, GHQ took the opportunity of the December 1949 visit to Okinawa by Brigadier-General Sams, Director of the Public Hygiene Bureau, Far East Forces Headquarters to announce the establishment of health-care offices and stronger measures to combat venereal disease. The setting-up of health-care offices did improve these measures, with the offices conducting syphilis serum reaction tests, gonorrhea staining tests and treatment, and follow-up studies on infection sources. Public hygiene nurses and venereal disease tracers conducted tests and follow-up surveys not just in health-care offices but also out in local areas.

In 1951, the Ryukyu Government established a venereal disease prevention committee within the Health and Welfare Bureau, appointing to it the Director of Health and Welfare, the police commissioner, Director of the Public Hygiene Division, Director of the Crime Division, and academics. Below this, local committees were also set up in each of the districts under the jurisdiction of health-care offices, and measures to combat venereal disease pursued.

Further, in 1953, the U.S. military government created the "A-sign" system as a means of ensuring hygienic practices in related businesses. To receive a license under this system, businesses had to acquire a certificate from a health-care office certifying that they had been examined under the Food Hygiene

Law, and then had to be re-examined by the U.S. army, meeting the conditions which the army had laid down. U.S army personnel and staff were prohibited from eating and drinking in any premises which had not been accredited with the A sign. When food poisoning or venereal disease appeared in A-sign shops, these were placed off limits to the U.S. army, which forced A-sign premises to institute venereal disease check-ups.

The Venereal Disease Prevention Law legislated by the Ryukyu Government in 1962 made possible free examinations, treatment and hospitalization for the general public as of 1964. As a result, those women working in entertainment areas without A-sign accreditation also started to receive examinations and treatment at health-care offices. Using public funds for such examinations was a measure not pursued elsewhere in Japan, and proved to be an effective means of checking the spread of venereal disease.

Finally, working with the Ryukyu Government to strengthen measures to prevent not only venereal but also other infectious diseases, the USCAR dispatched many personnel abroad and to the Japanese mainland to train as specialists in various related fields, which was extremely effective in promoting health and welfare administration in Okinawa.

(3) Effect of Venereal Disease Countermeasures

In 1972, marking Okinawa's reversion to Japan, the Anti-Prostitution Act was put in place, which made it difficult to obtain further statistics on prostitutes.

Through the above measures, as well as the advance of antibiotics, soft chancre and lymphogranuloma venereum had virtually disappeared as of around 1980, while syphilis was also on the downturn.

Since then, the changing times have also brought more diverse attitudes to sex, and gonorrhea and other sexually-transmitted diseases like Chlamydia and AIDS are apparently on the rise, particularly among young people. Efforts are now being made to educate the public toward changing individual behavior.

Keywords: GHQ, Public Health Center, A sign, Venereal Disease Prevention Act, Public funding, Fostering experts

REFERENCES

<Japanese>

Inafuku, M. (1995) *Okinawa Shippeishi [Disease in Okinawa]*. Daiichishobo.

Prevention Division, Environment, Health and Welfare Department. *Okinawa Sengo no Hokenjo no Ayumi: Hokenjo 30 Shunen Kinenshi [Postwar History of Okinawa's Health Centers: Publication Commemorating 30 Years of Health Centers]*. Okinawa Prefecture.

3-6-10 Environmental Hygiene Measures

Takao Okiyama
Food Section Manager,
Chuou Health Center, Okinawa Prefecture

(1) Measures to Secure a Safe Water Supply

Okinawa Prefecture experiences annual rainfall of more than 2,000 millimeters, but because much of the terrestrial rain drains into the sea, there is little groundwater or river water, making it extremely difficult to secure an adequate supply of natural water.

During the pre-war period, waterworks were constructed only in certain areas, which had their own water resources, such as Naha City. In other areas, households depended on spring water, groundwater, and rainwater.

In Naha City in 1933, Okinawa's first real waterworks were constructed using water resources drawn from Urasoe and Ginowan. Initially, 3,000 households were supplied with an average of 56 liters per person per day. This was not much compared to the average of 396 liters per person per day supplied in Okinawa in FY1992.

Immediately following the war, the lack of waterworks forced most Okinawa residents to secure their own drinking water and other water supplies, while the deteriorating living environment led to a high incidence of contagious disease. For example, there were 1,785 cases of dysentery in 1946, 1,865 in 1947.

Waterworks accordingly became a pressing issue, and the U.S. civilian government provided subsidies to local towns and villages to build mini-waterworks, with water supplied for the first time through such a waterworks in Naha City in 1951.

This marked the start of serious waterworks construction in Naha City, but the rainfall shortages and drought during the summer season were a great trial to those other towns and villages without waterworks, with the most important duty of the local authorities being to secure an adequate and safe household water supply.

Local mini-waterworks at the time were built using local subsidies known as commissioner's funds. These, however, only supplied residents directly with spring water through a simple chlorine disinfection process, which skipped the precipitation and filtration stages. Moreover, few administrators understood the principles of chlorine disinfection, resulting in frequent epidemics of water-related contagious diseases like dysentery. Improving the management and administration of the mini-waterworks therefore became an urgent priority.

Later, as Okinawa was rebuilt, waterworks were built by individual towns and villages, with waterworks administration shifting from the civil engineering and construction section to what was then known as the health and welfare section. Waterworks of the time were still deficient in terms of

water processing and disinfection facilities, while the administration of mini-waterworks remained poor. To address these issues, local health-care offices began to provide greater direction for administrators in terms of health checks, water quality examinations, and management and maintenance, seeking to ensure a safe drinking water supply.

Pamphlets on the hygienic management of drinking water were also distributed to schools, which were directed to make daily disinfection records.

Thanks to major steps forward in the construction of waterworks based on the Okinawa Reconstruction and Development Plan, towns and villages were finally provided with safe water supplies, lowering the incidence of water-related contagious disease. The development and promotion of these waterworks therefore contributed substantially to improving public hygiene.

The waterworks dissemination rate rose from 52.0% in 1963 to 99.7% in 1992, outstripping the national average of 95.1%.

Around 1985, river water from central and southern Okinawa and the dam in the north of Okinawa Island itself were no longer meeting demand, with water sources becoming a serious problem. This was addressed by building a new dam in the north of Okinawa Island, while more distant islands with few water resources were supplied with facilities to pump water from the ocean floor, desalination plants and subterranean dams.

(2) Transformation of Sewage Processing

From 1886 through to around 1930, the toilets used by most Okinawan farming households were designed to feed human feces through to the pigs, or else the feces were pumped out and taken away. These toilets were far from hygienic, and parasite studies conducted from 1923 to 1937 revealed that 71% of the 43,000 persons examined were carrying parasites, with parasites prevalent even before the war.

After the war, the USCAR banned the use of "pig toilets" on the grounds that these were unhygienic and provided a breeding ground for parasites. As a result, most toilets up until around 1955 were the pump-out variety. The pumped-out waste was transported by horse-drawn carts for use as fertilizer in farming areas, but because this was distributed on the fields before it had decomposed adequately, there was a high rate of parasite infection among local residents. As the pump-out toilets were breeding grounds for maggots and were also cockroach and rat nests, developing more hygienic toilets was a major issue, not only in Okinawa but also on mainland Japan.

In 1938, the Ministry of Health and Welfare began to disseminate an improved toilet of Ministry design in order to eliminate parasite infections and digestion-related contagious diseases, as well as to ensure safer and more effective fertilizer. The new toilets had three tanks, with waste moved from tank to tank, providing sufficient time to kill any parasites. Because the parasites decomposed completely in around six months, it was then safe to pump out the waste for use as fertilizer.

The design was drawn from the "Kentucky toilet", which had been created through subsidies from

the Rockefeller Foundation, but because feces are not used for fertilizer in the United States, the construction of the final tank was a little different in the Japanese version.

The Ministry of Health and Welfare provided subsidies to have the new toilets installed in various parts of the country, but while the rate of parasite infection did fall in areas with the new toilets, poverty was so great in Okinawa that the old pump-out toilets remained by far the more predominant, with few of the Ministry toilets put in.

By the 1970s, the pumped-out waste was no longer being transported by horse-cart, but instead by vacuum cart. The waste was stored temporarily in facilities set up by local towns and villages, and used as fertilizer once it had decomposed. Later, however, as chemical fertilizers became more popular, the use of waste was discontinued. In addition, by around 1955, living conditions were also beginning to improve in Okinawa, leading to the gradual dissemination, also encouraged by the U.S. civilian government, of flush toilets attached to septic tanks.

In 1965, 72.4% of the toilets in the area around Kokusai Dori Street, Okinawa's main street, were pump-out toilets, and 27.6% flush toilets with septic tanks. There was still little understanding of septic tanks among local residents, so that only 40% met structural standards for sewage purification, and the public sewage channel running along Kokusai Dori Street was apparently less than fragrant.

There was also accommodation for rent to foreigners which had flush toilets with no septic tanks, releasing the waste directly into sewage ditches, while some waste was also illegally dumped in the Kokubagawa River. Health-care offices worked hard to deal with these problems, cracking down more strictly on offenders.

Some farming households were equipped with the "Lola simple improved flush toilet", named after a sewage expert called Lola who had been dispatched to Okinawa as part of the aid provided by the USCAR during the "zero parasites" campaign launched in Okinawa around 1965. Rather than the current tank-style, these were three-tiered units provided with water ladles to wash away the waste, thus conserving water.

As of around 1963, sewage works began to be built around Okinawa, but in 1973, when Okinawa was returned to mainland Japan, the rate of sewage works construction was still only 50% in Naha and sewage services had been extended to only 10.5% of the surrounding region.

The water quality in Naha City's Asatogawa, Kumojigawa and Kokubagawa rivers was deteriorating at the time, with not only industrial and livestock wastewater, but also wastewater from household septic tanks becoming a problem. Recognizing the lack of understanding of septic tanks, as well as the number of people who thought that once installed, septic tanks never needed cleaning, health centers began to work harder on wastewater surveys and guidance designed to improve the situation.

In 1997, around 87% of Okinawa's total population-approximately 1.29 million persons-were using flush toilets, 13% pump-out toilets. Of the flush toilets, 52% were connected to sewage pipes, while 48% had septic tanks.

Keywords: Natural water resources, Mini-waterworks, Regional subsidies, Chlorine disinfection, Okinawa Reconstruction and Development Plan, Dams, Parasites, Digestion-related contagious diseases, Pump-out toilets, Septic tanks, Sewage works

3-7 Measures to deal with Harmful Pests

3-7-1 History of Pest Eradication in Okinawa

Takao Kishimoto
Director, Department of Biological Sciences,
Okinawa Prefectural Institute of Health and Environment

(1) Introduction

Post-war pest eradication in Okinawa evolved through three phases in line with the changing times: eradication by regional hygiene divisions directed by the U.S. military (1945-51); eradication by health centers (1952-72); and eradication by towns and villages (1972-1998). The New Law on Infectious Diseases, which was put into force in 1999, is expected to have a major impact on pest eradication.

(2) Eradication by Regional Hygiene Divisions directed by the U.S. military (1945-51)

Control of malaria on Okinawa main island

In the post-war period, Okinawa main island was struck by a widespread tertian malaria epidemic, with 160,000 persons contracting the disease in 1946 and 660 deaths as a result.

In September 1948, hygiene regulations announced in the 33rd directive of the U.S. Military Government created local hygiene divisions for nine areas, placing these under the control of the Okinawan civilian government. These divisions were responsible for directly leading and monitoring town and village hygiene divisions, strengthening hygiene work, and improving residents' hygiene awareness. They also employed some 2,000 hygiene workers to eliminate rats, mosquitoes, flies and other pests using DDT and other chemicals. Pesticides and the wages of local hygiene division staff and workers were paid by the military government. The military government played an extremely active role in pest eradication, including chemical spraying from planes (1945-52), technical instruction, and other forms of cooperation. These efforts created a line of defense against the diseases which raged through post-war Okinawa.

Local hygiene division task forces were mustered to cover a population of 10,000, with each division comprising one chief hygiene inspector, one labor monitoring squad leader, and four persons to handle pesticide equipment. An article in the 5 September 1948 "New Okinawa People's Gazette" suggests that infectious disease prevention teams staffed by a total of 1,620 persons were at work.

By the time health centers were launched in 1951, malaria had almost disappeared from main island of Okinawa, and the local hygiene divisions were amalgamated with their health-care office counterparts. Malaria on Okinawa main island is thought to have been carried by Shina, Saperoi and Otsuru anopheles. The widespread epidemics of "war malaria" in Okinawa were thought to have

been spurred by (a) the social disruption caused by the war; (2) the exodus of local residents to the north away from the southern frontline; and (c) the virtual annihilation of local livestock.

(3) Eradication by Health Centers (1951-1952)

Health centers were launched in 1951, with Government of the Ryukyu Islands established in 1952. Because of the prevalence of infectious diseases in Okinawa Prefecture, health centers took on the task of pest eradication. Okinawa main island was subject to widespread Japanese encephalitis, while malaria was rampant throughout the Miyako and Yaeyama Islands. Pest control officers attached to health centers apparently numbered a total of 262-207 for Okinawa Island, 20 for the Miyako Islands, and 35 for the Yaeyama Islands. The control of malaria and filaria was one of the major achievements of the health centers in the days of the Ryukyu Government.

1) Control of malaria on the Miyako and Yaeyama Islands

While the Miyako and Yaeyama Islands in particular were known for malaria even before the war, the disease became rampant in the post-war years, causing many deaths. Thermic fever, tertian malaria, quartan malaria and hybrid malaria were the known protozoans, a more complex situation than the malaria on Okinawa main island. The carrier insect was A. minimus Theobald, which is found in the Miyako and Yaeyama Islands and further south. The main means of dealing with these carrier insects at the time was larvae eradication. In 1957, Dr. Charles M. Wheeler, an entomologist from U.S. Armed Forces Medical Research Unit 406 visited the islands to undertake a rigorous study and completely reform traditional malaria elimination methods. Because A. minimus Theobald tended to rest on walls inside houses after consuming blood, DDT was sprayed inside houses to kill the adult insects there, thus cutting off the malaria contagion path. Water was used to dilute 75% DDT down to 5%, with 2.0 to 2.9g per square meter of this substance sprayed on wall surfaces. This indoor residual spraying method was continued twice a year for seven years. It was highly effective in destroying adult insects, and after five malaria recurrences on Yaeyama in 1961, indigenous malaria was completely eradicated from Okinawa Prefecture, with an eradication announcement made in 1978.

2) Suppression of filaria on the Miyako, Yaeyama and Okinawa Islands

Filaria control efforts were launched in 1965 on the Miyako Islands using subsidies from the Japanese and U.S. governments. Drs. Manabu Sasa and Hugh L. Keegan visited the islands to undertake a survey and prepare a detailed plan. Blood tests were conducted on all Okinawa residents, pinpointing filaria victims and administering these with Diethylcarbamazine (known by the brand name of Supatonin). The problem of carrier insects was addressed through the extermination of tropical house mosquitoes. Adult insect extermination was approached particularly thoroughly on the Miyako Islands. In terms of extermination method, 50% Malathion was diluted with kerosene to 2.5%, and 50ml per square meter sprayed inside houses, attacking the filaria infection cycle. Indoor residual

spraying was conducted only on the Miyako Islands (February 1965 to September 1966). Local residents provided full cooperation, and the project went ahead smoothly. More than 99% of local residents received blood tests, contributing greatly to the eradication of filaroids from their human hosts. The same project was then extended to the Yaeyama and Okinawa Islands and continued up until 1979, with an eradication announcement made in 1988.

3) Dealing with Japanese encephalitis on Okinawa Island

The Japanese encephalitis virus is transmitted by A. minimus Theobald, which breeds in rice fields, with the contagion cycle passing the disease from mosquitoes to pigs to mosquitoes and then on to people. While pre-war records are unclear, there appear to have been no cases of Japanese encephalitis on Miyako and Yaeyama, with the disease concentrated in the postwar years on Okinawa Island. In 1963, countermeasures were strengthened by appointing six staff to look at the mosquito issue at the Ryukyu Hygiene Research Institute, as well as 10 staff to health-care offices and their local branches to collect the offending insects. Traditional larvae eradication methods were strengthened, with the eradication of adult insects also launched using dusting machines. A 50% Malathion emulsion was diluted with diesel oil to 25 parts, and dusted between six and 10 in the evening. This eradication method was continued between March and October, choosing windless days wherever possible. As the mosquitoes developed a resistance to Malathion, a 50% Baytex emulsion was substituted as of 1965.

While there were 120 Japanese encephalitis victims in 1963, this number subsequently began to drop steadily, with one victim recorded in 1981, and one more in 1998. The decline in Japanese encephalitis was the result of two developments: firstly, many livestock farmers had begun to expand their herds, with pig sties accordingly being shifted away from farmhouses and into the suburbs. Secondly, assuming that the size of rice fields was 100 in 1961, by 1992 this had shrunk to 2.8. Rice species were also improved, shortening the cultivation period, and farming technologies began to be introduced which prevented A. minimus Theobald from breeding, such as rice field water management. Mosquito populations near human residences therefore began to fall, lowering Japanese encephalitis incidence. However, the disease is common to both humans and animals, with a Japanese encephalitis warning issued every year.

(4) Eradication by Towns and Villages (1972-1998)

In 1972, Okinawa's return to mainland Japan was accompanied by the transfer of pest eradication work from health-care offices to towns and villages. These continued the spraying of smoke as a means of addressing Japanese encephalitis, putting an end to the process when the number of cases decreased. Today, pest eradication is carried out by towns and villages in Okinawa, as is the case on the mainland. Over the years, pest control officers have been trained, who demonstrated excellent pest eradication skills on the occasion of the Okinawa International Ocean Exposition.

In subsequent years, there has been an increase in the number of complaints about indoor cockroaches and indoor dust mites, as well as the return of head lice, with urban pests becoming rampant. Latoia lepida arrived in 1982, followed in 1983 by the Yanbaru millipede, which proliferated in unusual numbers and expanded its habitat in 1994 to include the whole of Okinawa Island. The spider pandemonium of 1995 resulted in identification of the habitat of Latrodectus geometricus C.L. Koch, and in the 1950s, it was reconfirmed that Latrodectus sp. was living in the Yaeyama and Miyako Islands, where reports were received of spider bites. Latrodectus hasseltii Tholell was subsequently found, but does not appear to have taken hold.

According to the FY1996 overview of Okinawa Prefecture's environmental development project, rats and insect pests caused 6,193 cases of damage, with 1,044 due to bees, 860 to millipedes, 782 to flies, 672 to spiders, 624 to termites, and 548 to mosquitoes. Bees and millipedes are linked to local greening efforts, while fly-related cases may have been affected by the mass media commotion over the pathogenic colon bacillus O157, and the spider cases due to the widow spider panic. According to a Ministry of Health and Welfare report, more bees occur in Okinawa Prefecture than anywhere else in Japan.

Keywords: Pest eradication, Malaria, Filaria, Japanese encephalitis, Carrier insect countermeasures, Indoor residual spraying method, Eradication of adult insects, Larvae eradication

REFERENCES

<Japanese>

35th Anniversary of the Okinawa Monitoring Association (1986) *Eisei Kanshi Gyomu no Ayumi [Development of Hygiene Monitoring]*.

Head of Okinawa Town and Village Leaders' Association, Nakamura, E. (1955) *Chiho Jichi nana-shunen Kinenshi [Seventh Anniversary of Local Government]*.

Hira City Education Committee (1985) *Hirashi, dai 6kan, shiryouhen 4 [Hira City, Vol 6. Doc. 4.]*.

Ishigaki City Hall (1989) *Ishigaki-shi Shi, Shiryohen, Kindai 3, Malaria Shiryo-shusei [Malari-related materials, Modern History 3, Documents, History of Ishigaki City]*.

Living Hygiene Division, Environmental and Health Department (1994) *Kankyo-seibi Jigyo no Gaiyo [Overview of Environmental Development Projects]*. Okinawa Prefecture.

Ibid. (1995).

Ibid. (1996).

Public Hygiene Division (1972) *Okinawa ni Okeru Filaria-byo Boatsu Gaikyo Hokokusho [Report on the State of Suppression of Filaria in Okinawa]*. Government of the Ryukyu Islands.

Sasa, M. (eds.) (1977) *Nanseishoto no i-dobutsu [Pests in the Southwest Islands]*. Shinjyuku Shobo.

Sunagawa, K. (ed.) (1988) *Filaria Boatsu/Okinawa Hoshiki.*

Publishing Authority, Government of the Ryukyu Islands (1959) *Ryukyu shiryou dai 4 shu hoken eisei [Ryukyu Documents, Fourth Volume. Health Care and Hygiene]*.

<English>

Downs, W. G. (1949) *Malaria on Okinawa*. Bulletin of the U.S. Army Medical Department 9, 8: 625-655.

Heaton, Leonald D. (1963) *Medical Department, United States Preventive Medicine in World War II.* Communicable Disease, Malaria Vol. VI.: 474-495.

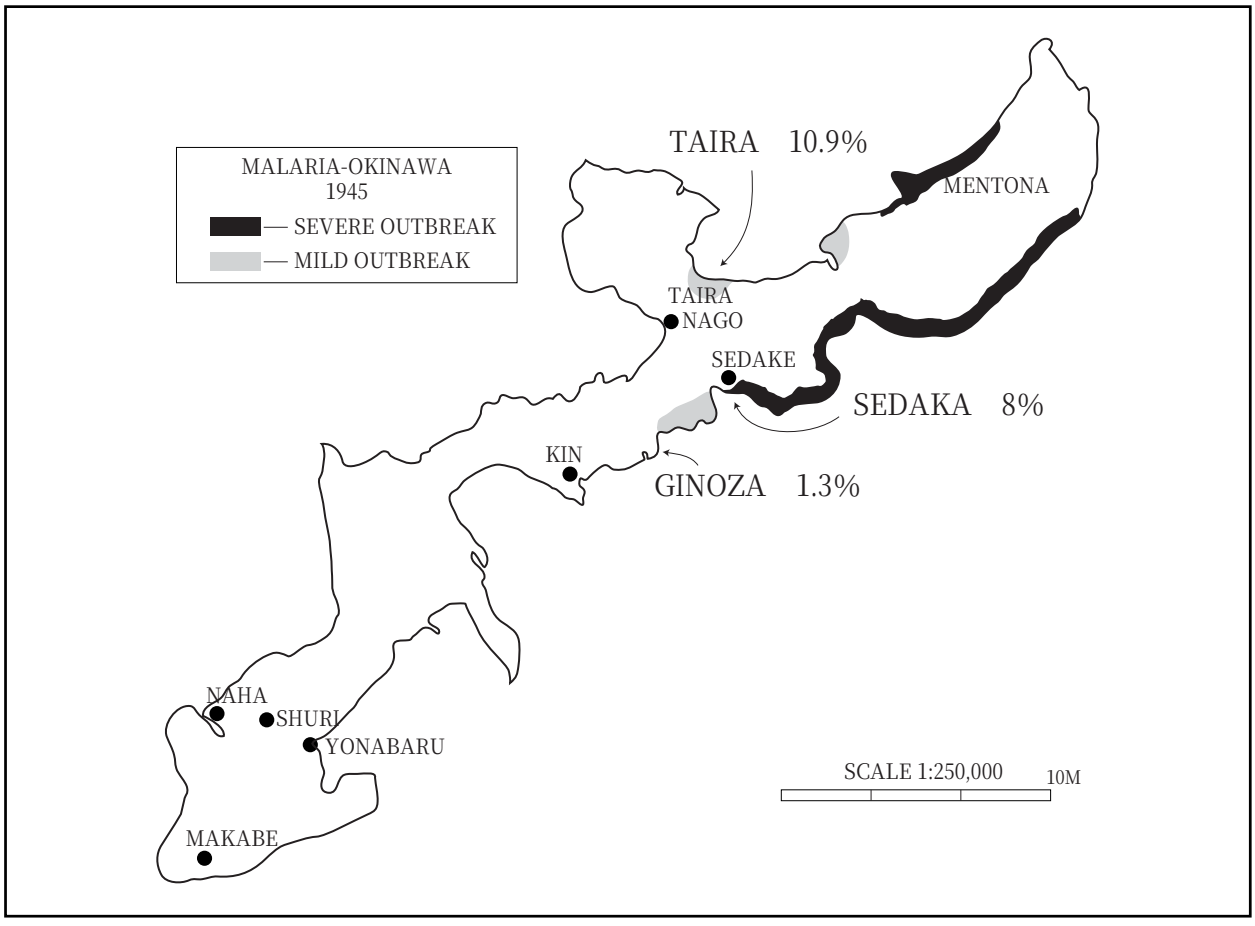
SUPPLEMENT: HISTORY OF VECTOR CONTROL OF OKINAWA ISLANDS, 1945-1998

Takao Kishimoto

Summary

Pest control efforts in Okinawa are described in the context of three different periods, i.e., those associated with the District Hygiene Sections under the direct control of the U.S. Military, the health centers under the government of the Ryukyus, and the Okinawa prefectural government and the municipalities following the reversion of Okinawa to Japan.

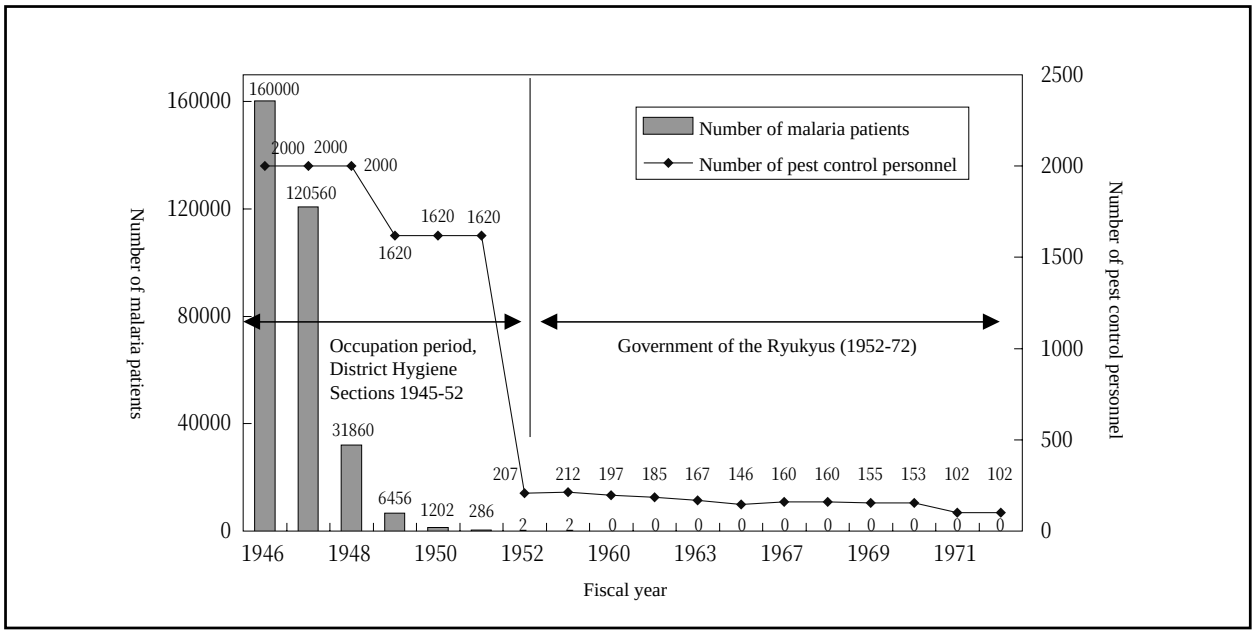
Figure 3-4 Regional Spread of Tertian Fever in Okinawa in 1945



Source: Downs, W. G. (1949) *Malaria on Okinawa*.

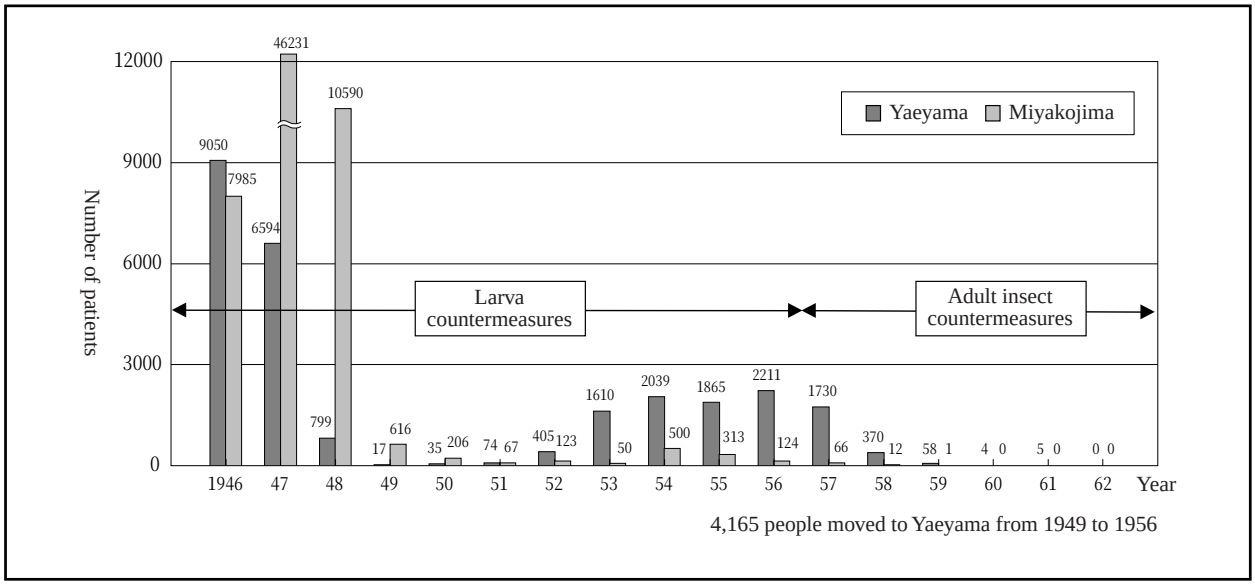
Of 2,209 Okinawan residents examined in May and June 1945, 0.4% tested positive. Of 1,337 persons examined in August and September 1945, positive rates were 1.3% in Ginoza, 8% in Sedake, and 10.9% in Taira. Of 600 patients exhibiting symptoms in Sedake, 90% were found to be infected with malaria. It is also reported that 94 American soldiers invading the Northern part of Okinawa Island and 48 soldiers who stayed in Koya (near Sedake) for ten days were newly infected.

Figure 3-5 Trends in Numbers of Malaria Patients and Pest Control Personnel, Okinawa Island (1946-1972)



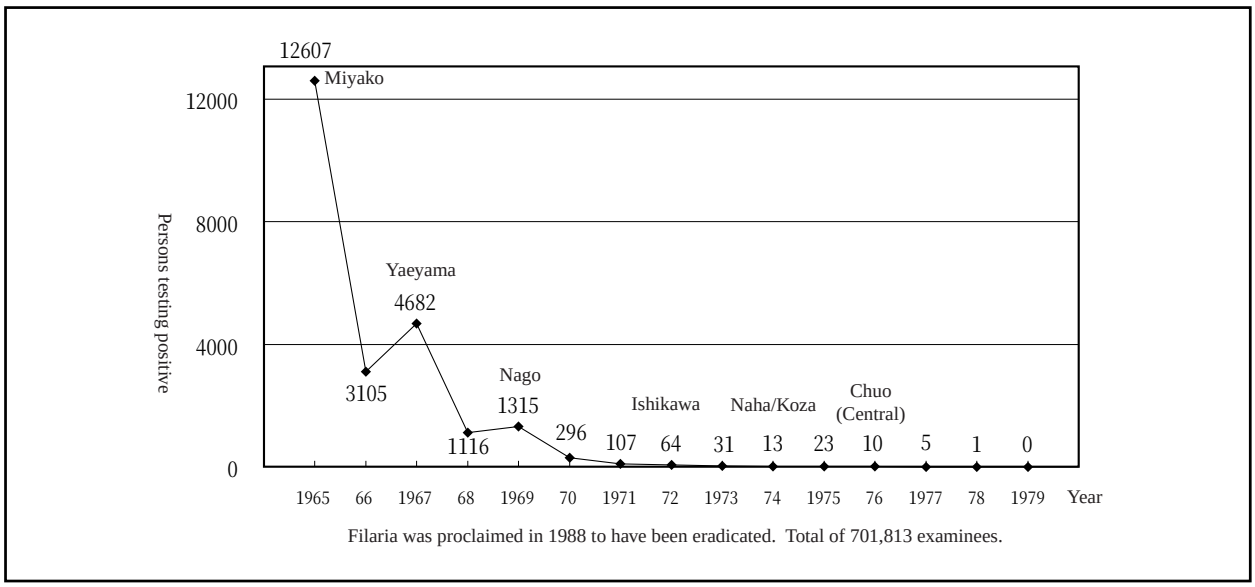
Some 2,000 hygiene workers were mobilized during the period corresponding to the District Hygiene Sections, with their wages paid by the U.S. Military Government. An article in the Okinawa shin-minpo (a contemporary newspaper) dated September 5, 1948 states that 1,620 persons were active on disease prevention teams. Organizationally, hygiene officers for the respective districts, villages, and outlying village areas functioned under the Public Hygiene Department. These personnel were transferred to the health centers when they were established in 1951.

Figure 3-6 Changes in Numbers of Malaria Patients, Yaeyama Islands and Miyako Islands (1946-1962)



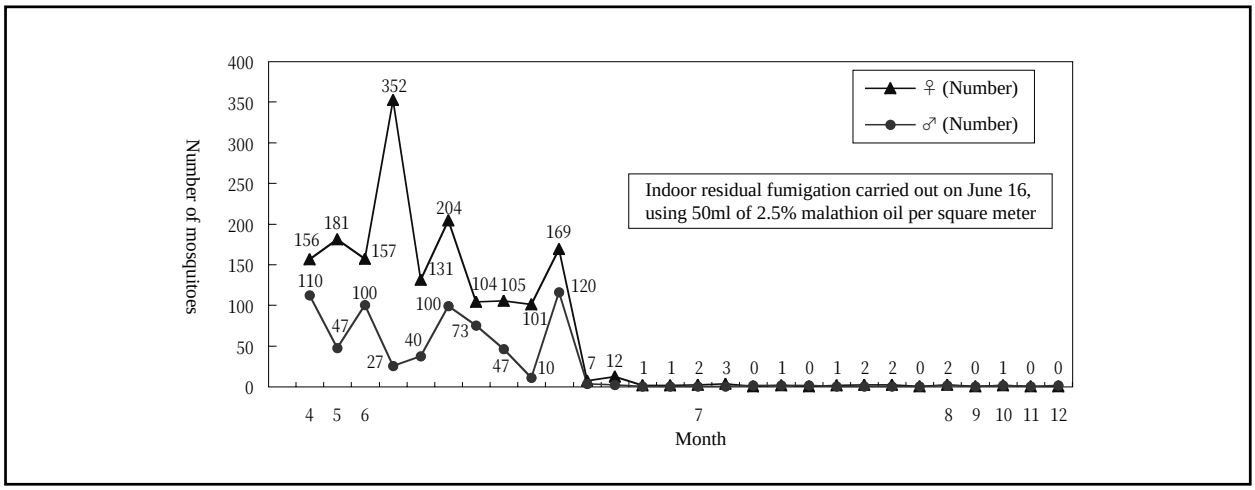
Because 4,165 people moved to affected areas from Okinawa Island and Miyako during the period 1949-1956, such that an increase was again seen in the number of malaria patients from 1952. Personnel reductions were also implemented with the transition to the government of the Ryukyus from the government of the Yaeyama Islands and the government of the Miyako Islands.

Figure 3-7 Trends in Persons Testing Positive for Filaria, Okinawa Prefecture (1965-1979)



Parasite removal effectiveness is high. A dosage of 6mg of diethylcarbamazine per kg of body weight is administered each day for six consecutive days. This treatment is repeated after the passage of two months.

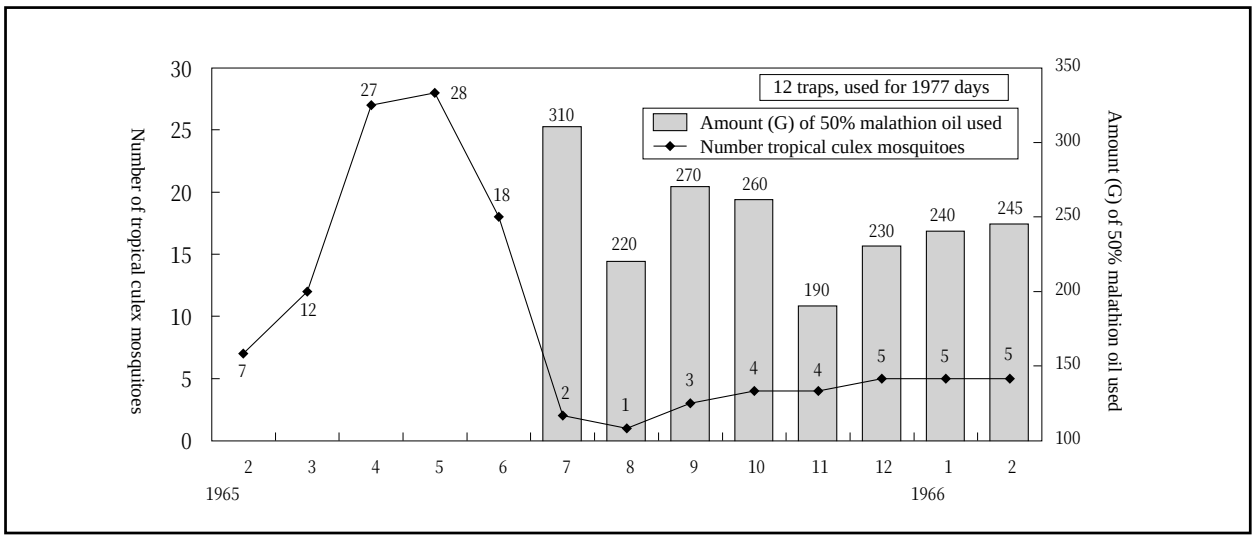
Figure 3-8 Effectiveness of Indoor Residual Spraying, Miyako and Kitayama (1965)



A New Jersey light trap was set up inside a residential dwelling. The number of tropical culex mosquitoes entering the house and trapped was found to range from 101 to 352 during the period from

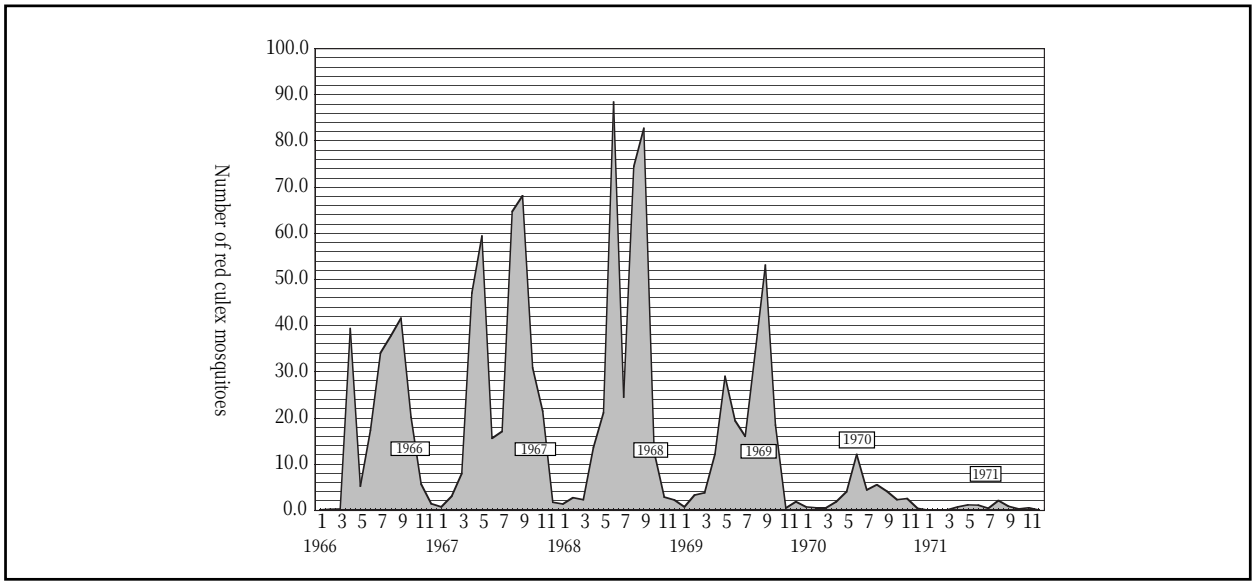
April to early June. On June 16, 50ml of 2.5% malathion oil per square meter was sprayed. The number of mosquitoes entering the house and trapped from mid-June to December ranged from 0 to 12.

Figure 3-9 Seasonal Variations in Tropical Culex Mosquitoes (Culex pipiens quinquefasciatus Say) and Amount (G) of Malathion Oil Used, Miyako (1965-1966)



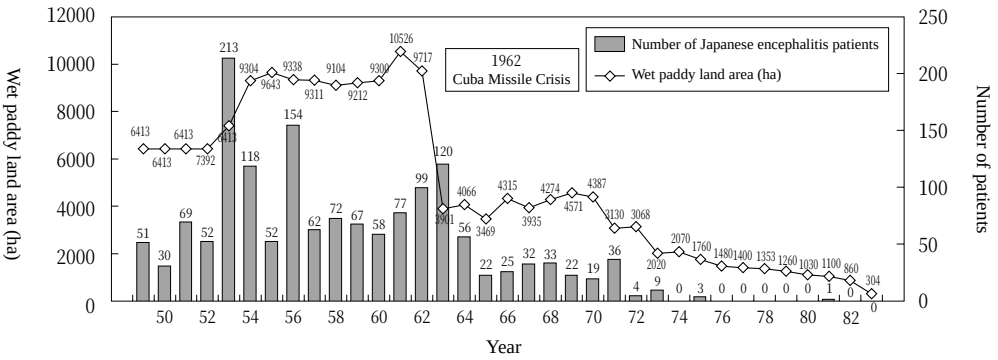
Mosquitoes (Culex pipiens quinquefasciatus Say) were collected using New Jersey light traps were set up at 12 locations on Miyako. The number trapped ranged from 7 to 27 during the period from February to June, falling to an average of 5 from July to the following February. This was due to concentrated use of malathion oil from July onwards for the purpose of mosquito extermination. Between 200 and 300 gallons of malathion oil were used in January.

Figure 3-10 Seasonal Variations in Red Culex Mosquitoes (Culex tritaeniorhynchus Giles), Okinawa Island (1966-1971)



Mosquitoes were collected at 16 locations on Okinawa Island and reported in terms of the number of mosquitoes per night. There are two peaks in the variation of red culex mosquitoes (Culex tritaeniorhynchus Giles), in May and September. Rice is double-cropped, and these peaks correspond to higher mosquito density during periods of rice growth (i.e., wet paddies).

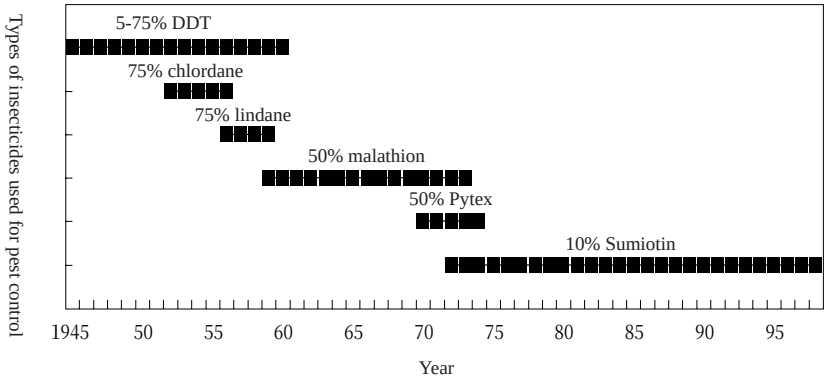
Figure 3-11 Trends in Numbers of Japanese Encephalitis Patients, Okinawa Prefecture (1949-1992)



Social reference U.S.-U.S.S.R. tension over Cuba
Natural reference Major drought
Social reference
With rapid rises in sugar prices, acceleration occurred in the conversion of wet rice paddies to sugar cane fields.
With the reversion of Okinawa to Japan in 1972, mosquito control shifted from the prefectural government to the municipalities.

Figure 3-11 illustrates the relationship between the number of Japanese encephalitis cases and the land area of wet rice paddies (total of first and second plantings). With rapid rises in the price of sugar accompanying tension over Cuba from 1959 to 1962, cultivation of rice shifted towards that of sugar cane. Encephalitis cases were experienced at a rate of 20 to 213 per year prior to 1971, when wet paddy land area was over 3,000ha but declined to 9 or fewer from 1972, when the land area was under 2,000ha. One case occurred in 1981, and, subsequently, one in 1998.

Figure 3-12 History of the Use of Insecticides for Pest Control (1945-1998)



DDT-chlorine compounds, chlordane, and lindane were used from 1945 to 1960 for malaria suppression, and malathion, an organic compound of phosphorus was used to fight Japanese encephalitis and filaria from 1960 to 1972.

The preparations used were of American manufacture, and were highly concentrated. Use was switched to Japanese-produced Sumiotin from 1972 onward.

Figure 3-13 Rodent and Insect Pest Infestations (1994-1996)

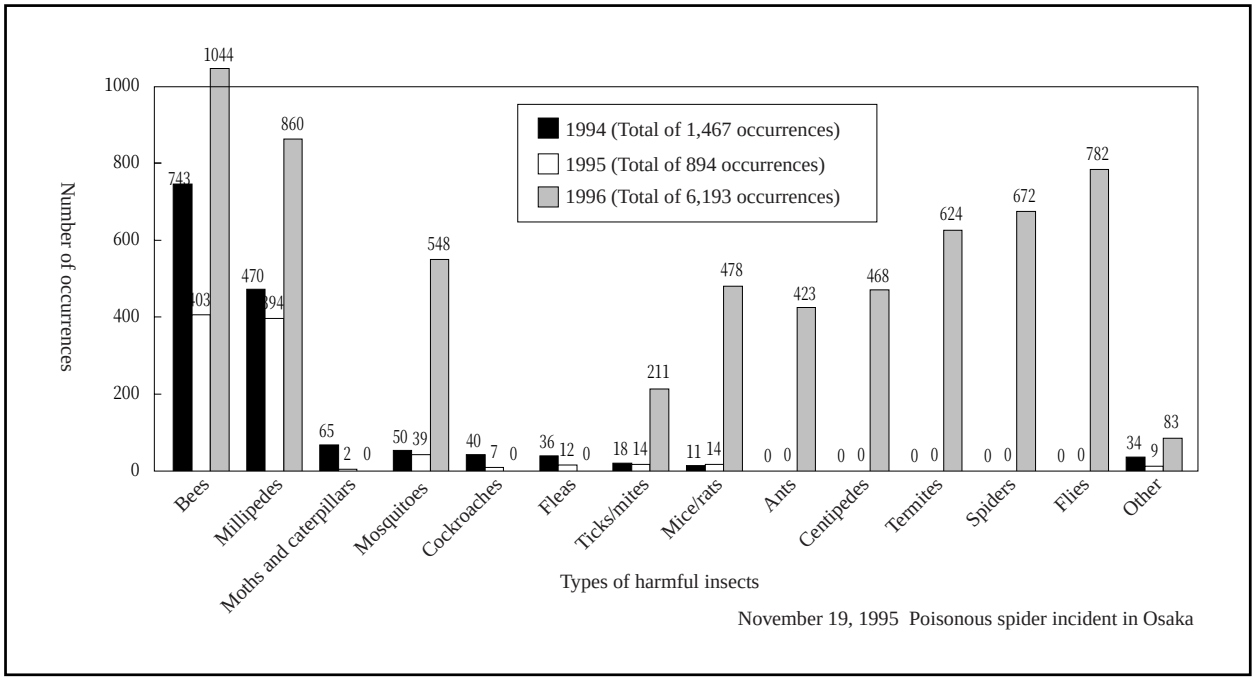


Figure 3-13 shows the situation with respect to rodent and pest insect infestations from fiscal 1994 to 1996. Bees ranked first in each year, followed by millipedes. Variations were seen in positions ranked third and below depending on the year in question.

3-7-2 Measures Against Habu Pit Vipers

The habu pit vipers found in Okinawa Prefecture are thought to have migrated into the area some two million years ago when there was a land bridge with Taiwan and China. The current distinctive distribution on each island then resulted from subsequent diastrophism. This distribution of habu pit vipers is seen across 85% of the prefecture, and about 200 persons are treated for snakebite annually. Habu venom is a hemolytic protein that induces necrosis starting from the location of the bite, and can require amputation or cause death from shock. Many snakebite victims suffer from after-effects, and the impact on the health of the prefecture's residents and on productive activities in the context of daily life is not inconsiderable.

Research on habu venom antitoxin was pursued vigorously after World War II, and the development in 1959 by Sawai and his colleagues of a dry antitoxin based on horse blood serum led to standardization of habu snakebite treatment throughout the Ryukyu Archipelago. The use of the new dry antitoxin dramatically decreased the fatality rate.

Measures against the habu pit viper problem can be divided into three general areas:

(1) Countermeasures for Victims (Humans)

Emergency treatment for snakebite victims and subsequent rehabilitation

Education of the general public

(2) Countermeasures for Aggressors (Snakes)

Ecological research on habu pit vipers (breeding, behavioral capabilities, feeding habits, etc.)

(3) Environmental Countermeasures

Factual investigation of the habu habitat (distribution)

New research on habu antitoxin and improvements in medical treatment has made direct fatalities extremely rare, but the basic approach of the prefectural government is the goal of separation of human settlements and habu habitats. Various educational activities are also conducted so as to encourage a mentality of preventing snakebite, such as distributing pamphlets, issuing habu warning announcements, and habu snakebite prevention month.

3-8 Food Hygiene Measures

Munetaka Hirakawa
Chief, Living Environment Section,
Chuou Health Center, Okinawa Prefecture

3-8-1 Food Hygiene Measures

(1) Introduction

Most of Okianwa's islands have small arable land areas, poor soil, and are affected by major typhoons and early droughts. Food production is low, with primary industry having barely supported a prewar population of 600,000. The use of unfermented human manure by farmers as a means of increasing agricultural output caused the spread of parasites such as ascaris (roundworm), hookworm, and trichuristrichura. Also, food shortages due to early droughts and typhoons resulted in frequent poisoning deaths from cycads, and the use of unsterilized well water led to the common occurrence of dysentery. Okinawa during period from Taisho (1912-1926) to early Showa (1926-1989) was marked by a low literary rate among the population, poor knowledge of public hygiene, orally transmitted diseases caused by infected food and water, food poisoning, and many parasitic diseases.

(2) General Situation Before and After the Introduction of Food Hygiene Measures

It is difficult to adequately describe the seriousness of the food situation in war-ravaged Okinawa just after the end of World War II. There were numerous tragic incidents of poisoning deaths from Japanese sago palm, as well as loss of sight from methanol poisoning.

The government of the Ryukyus, inaugurated in 1952, set up a Bureau of Health and Welfare, with health centers placed under its supervision. The Food Hygiene Law was effectuated in September of the same year, and the health centers began handling the issuance of permits for foodservice establishments. The numbers of inspectors and foodservice facilities corresponding to each health center as of September 1955 are shown below.

Naha Health Center	4 inspectors	1,927 facilities
Koza Health Center	2	2,961
Nago Health Center	2	358
Miyako Health Center	1	162
Yaeyama Health Center	1	329

Separately, in 1953, a rule was laid down whereby operators of restaurants catering to the occupying forces and their dependents had to undergo special inspection by a U.S. Military inspector. In 1958,

responsibility previously assumed by the U.S. Military for sanitary inspection of "A Sign" foodservice operators was transferred to the government of the Ryukyus. The "A Sign" (Approved for U.S. Forces) was an operating license that was only issued to first class facilities that had passed the strict inspection standards of the U.S. Military. This system deserves special note in terms of inducing improvements in the sanitary levels of foodservice facilities. A graded system with first, second and third class ranks was introduced in 1959 with regulatory revision of the Food Hygiene Law.

It was possible at the time to make money doing almost anything in the foodservice business. Unlicensed stands and stalls appeared everywhere, and these typically lacked the benefit of food preparation experience or hygienic perspective. The situation was particularly serious in Naha City, and was repeatedly taken up by the City Council. There were also specific and emphatic instructions issued by Public Health Department of the U.S. Civil Administration of the Ryukyus (USCAR) for improvement.

(3) Food Hygiene Measures

With the 1952 enforcement of the new Food Hygiene Law, restaurants, smaller scale foodservice establishments, cafes, etc. were subject to joint inspection by a health center hygiene inspector and the police; after passing the inspection, they were licensed by police headquarters, the Bureau of Health and Welfare, and the head of the enterprise licensing administration. The system was further complicated by the fact that confectionery manufacturers, butcher shops, fresh fish stores, and other establishments came under the jurisdiction of the health centers and the Bureau of Health and Welfare. As noted above, the hygiene-related mentality of the public was low, and the restaurants along the Gaabu River in Naha City lacked any form of sewage or wastewater treatment, nor did they have equipment for sterilizing dishes. Huts framed by standing four or five posts in the ground discharged wastewater directly into the river, and conditions were so unsanitary that when water levels flooded because of rain, sewage from toilets would flow out. The effort required to guide facilities towards improvement and to provide hygiene education was enormous.

Because a self-control system for foodservice-related operators was encouraged along with the effectuation of the Food Hygiene Law in mainland Japan in 1948, the various prefectures set up Food Hygiene Associations, and the operators themselves worked to diffuse a higher level of thinking with respect to food hygiene. In Okinawa, however, it was not until several years after the 1972 reversion of the prefecture to Japan that such an association was established.

(4) Conclusion

Food is absolutely essential to our survival, and securing its safety is no light matter. This has been true from the ancient past through to the present, and will continue to be so in the future. We have traditionally had to consider biological factors as contaminants ingested with food, including viruses, bacteria, and parasites, as well as food poisoning from natural toxins such as in blowfish and mushrooms.

In recent years, however, food hygiene issues have expanded to a level of complexity beyond the realm that can be addressed by individuals, including genetically modified food, irradiated food, and food contaminated with endocrine disrupters.

Keywords: Health Centers, Food hygiene law, "A Sign", Hygiene inspectors, Food Hygiene Association

3-8-2 Meat and Dairy Hygiene Measures

(1) Introduction

Pork is an essential element of the Okinawan diet. From the prewar period through to the postwar era, farming families throughout the islands each raised one or two pigs, and these were typically fed human manure. For this reason, parasite infection rates were extremely high, with pork tapeworm being a particular problem. After post-butchering inspection, dealers would traditionally pile the meat in baskets and circulate through the town to sell it. Leftover meat was simply salted and sold the next day.

(2) General Situation Before and After the Introduction of Meat and Dairy Hygiene Measures

As a result of strident efforts on the part of USCAR, the use of Huuru ("pig toilets") was banned. USCAR moved to Chinenson in 1946, and opportunities to set up slaughterhouses also expanded from about this time. The first postwar slaughterhouse in Okinawa was established in Ansha, paving the way for the sale of meat to be freely conducted, and slaughterhouses were subsequently opened in various other municipalities. There were 32 slaughterhouses at the time of Okinawa's reversion to Japan in 1972, but this number was pared to 12 by 1973 through administrative guidance-based rationalization.

(3) Background to Introduction, and Specific Measures

Resolving to improve the operations of these facilities, the government established the Veterinary Hygiene Section, which was to provide guidance to slaughterhouses, process milk, conduct rabies prevention activities, etc. In 1952, however, with the inauguration of the government of the Ryukyus, structural reform was undertaken in response to calls for the development of the livestock sector in the context of economic recovery. The veterinarians were accordingly transferred to the Livestock Section of the Economic Bureau. The Butchery Law was promulgated in September of the same year, but this was replaced in September 1969 with the Slaughterhouse Law.

The former duties of the Livestock Section were transferred to the Public Hygiene Section of the Bureau of Health and Welfare. In July 1969, at which point slaughterhouses and livestock inspection activities were placed under the jurisdiction of the respective health centers. Butcher shops still lacked fly control equipment and refrigerators, and inventory was limited to the amount of meat that could be

displayed for sale. Milk was also sold warm prior to reversion, but, concurrent with the application of Japan's Food Hygiene Law, meat and milk were required to be sold refrigerated.

(4) Conclusion

Meat and dairy hygiene began with guidance for the improvement of toilets, and proceeded to the rationalization of slaughterhouses, the introduction of refrigerated storage of meat and milk instead of warm storage, and hanging type processing and inspection systems in slaughterhouses instead of floor type systems. Meat and dairy hygiene improved accordingly. Future measures in this area are anticipated to emphasize the elimination of microbial contaminants such as E-coli (O-157).

Keywords: Slaughterhouses, Veterinary Hygiene Section, Butchery Law, Food Hygiene Law, Hanging type processing

REFERENCES

<Japanese>

Environment and Health Department (1991) *Hokensho no ayumi - hokensho soritsu 40 shunen kinen-shi [Progress of Health Centers - Commemorating the 40th Anniversary of the Establishment of the Health Centers].*

Okinawa Prefectural Hygiene Inspectors' Society (1986) *35 shunen kinen - eisei kanshi-in gyomu no ayumi [35th Anniversary Commemoration - Progress of Hygiene Inspectors' Duties].*

Okinawa Veterinary Medical Association (1985) *Showa 60 nen - Okinawa Juishi-kai nenpo [1985-Okinawa Veterinarians' Association Annual Bulletin]*. Okinawa Prefecture.

3-9 Welfare Measures for Disabled Persons

Here, let us consider welfare measures for the disabled that have been formulated by prefectural government based on the Okinawa Prefecture Long Term Action Plan for the Welfare of Disabled Persons.

This action plan was drawn up in light of the passage of the Basic Law Concerning Disabled Persons (December 1993) and the start of the Decade of the Disabled in Asia and the Pacific (running from 1993 to 2002) in order to improve the welfare of the disabled, and is based on the Third Okinawa Promotion and Development Plan. In addition, the Okinawa Prefecture Plan for Disabled Persons was formulated in March 1998 so as to realize step-by-step progress in the achievement of the concrete objectives of the action plan.

These objectives were to diffuse the concept of normalization among the prefecture's citizens, and to realize the goal of complete participation and equality for disabled persons. The action plan envisioned three broad categories: measures for physically disabled persons, measures for physically disabled children, and measures for mentally disabled persons (and children). The status of each of these categories is discussed below, together with specific policies and steps.

3-9-1 Welfare of Physically Disabled Persons and Physically Disabled Children

(1) General Conditions with Respect to Physically Disabled Persons

According to the Disabled Persons Welfare Law, physically disabled persons are defined as those persons having any of the physical disabilities shown in Table 3-7, who are at least 18 years of age and who have been granted a disabled person's record book by governor of their prefecture.

As of the end of March 1997, a total of 40,555 disabled persons were in possession of such record books in Okinawa Prefecture. In terms of type of impairment, there were 22,535 persons having impairments of their limbs or body, accounting for the largest number (55.6%). Persons with internal disabilities, a type of handicap that has shown an increasing trend in recent years, numbered 8,713. This represents a 10.1% rise over the previous fiscal year, the highest level of growth among the various types of impairments.

Table 3-6 Trends in the Issuance of Disabled Person's (Child's) Record Books

Fiscal year	1990	1991	1992	1993	1994	1995	1996
Number of record books issued	1,642	1,914	2,085	2,454	2,327	2,487	2,820
Percentage against the previous year	94.3	116.6	108.9	117.7	94.8	106.8	113.4

Table 3-7 Number of Holders of Handicapped Person's Record Books

	Under 18	18 or over	Total
Vision impairment	53	4,179	4,232
Hearing impairment	142	4,322	4,464
Speech/linguistic function impairment	8	603	611
Limb or body impairment (upper limbs, lower limbs, body)	993	21,542	22,535
Internal impairment (heart, kidneys, body, rectum, bladder, small intestine)	181	8,532	8,713
Total	1,377	39,178	40,555

(2) Support for the Physically Disabled

Rehabilitative support for the physically disabled begins with the issuance of a disabled person's record book, and covers a variety of areas such as the provision of compensatory equipment and the dispatch of home service personnel. The major forms of support are discussed below.

1) Rehabilitation Consultation Centers for Physically Disabled Persons

Rehabilitation consultation centers for physically disabled persons undertake medical, psychological, and vocational judgments in response to requests for consultation from the physically disabled. They also provide prescriptions and judgments as to the appropriateness of compensatory equipment at the request of municipal governments (i.e., support implementation institutions), as well as implementing consultation visitations where necessary. The numbers of cases handled by these consultation centers are increasing year by year, rising from 1,781 in 1990 to 2,502 in 1996.

2) Stationing of Consultants for Physically Disabled Persons

Consultants for physically disabled persons offer necessary guidance in response to consultation for rehabilitative support. They are stationed in every district in order to contribute to welfare enhancement for disabled persons by cooperating with the activities of welfare administration offices and other relevant institutions, and by promoting a mentality of support with respect to the physically disabled. There are currently 99 such consultants stationed throughout the prefecture.

3) Home Help Service Programs for Physically Disabled Persons

In cases where serious physical impairment poses a barrier to routine daily tasks, home helpers visit the homes of the disabled persons to assist with housekeeping and nursing care, or to accompany such persons when they go out from their homes. A time-wise description of the stationing of home helpers appears in the table below, showing an increase of ten locations from 1990 to a total of 30 in 1996, with corresponding increases in the actual numbers of home helpers.

Table 3-8 Stationing of Home Helpers for Physically Disabled Persons

Fiscal year	Number of municipalities where stationed	Number of home helpers	
1991	20	34	
1992	21	38	
1993	24	46	
1994	27	46	
1995	30	Full-time	18
		Part-time	116
		Guide helper	93
1996	30	Full-time	13
		Part-time	103
		Guide helper	60

4) Day Service Programs for Physically Disabled Persons

In order to encourage the independence of physically disabled persons, to enhance their daily lives, and to maintain and improve physical functions, various programs are provided on an outpatient basis such as creative activities and functional recovery training. At present, one location is available at the Naha City Center for the Welfare of Physically Disabled Persons.

5) Short Term Admittance for Physically Disabled Persons

In cases where nursing care providers for seriously disabled persons are unable to provide care due to illness, etc., such disabled persons can be temporarily admitted to rehabilitative support facilities (in principle up to seven days). This system was utilized during fiscal 1996 by 62 persons, who were admitted for a combined total of 771 days.

6) Promotion by Okinawa Prefecture of Social Activities for Physically Disabled Persons

Programs falling under this heading are intended to foster the development of organizations that will undertake activities contributing the promotion of social welfare for the physically disabled and other persons. This is a new area that has been implemented since fiscal 1996, and a major focus has been peer counseling leadership training.

7) Subsidies for Medical Expenses Incurred by Persons with Serious Disabilities

In order to lessen the economic burden sustained by persons with serious physical or mental disabilities, municipalities subsidize the deductible with respect to medical expenses under the Health Insurance Law, with the Okinawa Prefecture supplying half of such disbursements made by the municipalities. A total of 10,686 persons received these payments in fiscal 1996, and the total subsidized amount was 522.62 million yen.

Other programs and projects have included training for volunteer Braille transcribers (23 transcribers had been registered as of 1996), the provision of seeing eye dogs, marriage consultation services for

disabled persons, operating assistance for Braille libraries, as well as the implementation of many other services for the physically disabled.

(3) Physically Disabled Children's Welfare

1) General Conditions with Respect to Physically Disabled Children

The term "disabled children" refers collectively to children who have impairments affecting the limbs or body, vision, hearing/balance functions, speech/linguistic functions, internal organs, etc. There are 1,377 children under the age of 18 in Okinawa Prefecture who have been issued a disabled person's record book (as of March 1997). Children with limb or body impairments make up 72.1% of this figure; children having hearing or speech/linguistic function impairments account for 10.9%; vision impaired children represent 3.9%; and children with impairments of internal organs or respiratory functioning make up 13.1%.

Table 3-9 Number of Physically Disabled Children (Number of Children under the Age of 18 Holding a Disabled Person's Record Book)

(as of March 1997)

Children with limb or body impairments	Children with hearing or speech/linguistic function impairments	Children with vision impairments	Children with internal impairments	Total
993	150	53	181	1,377
(72.1%)	(10.9%)	(3.9%)	(13.1%)	(100%)

2) Support for Physically Disabled Children

There are two facilities in Okinawa Prefecture for children with limb or body impairments, with 250 places. These facilities offer treatment for children with functional disabilities, as well as teaching the knowledge and skills required for independence and self-support.

Table 3-10 Facilities for Children with Limb or Body Impairments

(as of March 1997)

Facility	Number of places	Address
Okinawa Rehabilitative Treatment Institute	140 inpatients, and 30 outpatients	2-3-1 Azakimiya, Naha City
Okinawa Pediatric Development Center	50 inpatients, and 30 outpatients	629 Hiyane, Okinawa City
Total	250 persons	

Treatment for children with progressive muscular dystrophy is also provided by the National Okinawa Hospital. In addition, with respect to autistic children, while the causes and therapeutic methods have not yet been established and the level of care is insufficient, such cases are currently handled by facilities for the mentally disabled, local treatment programs, etc.

3-9-2 Mentally Disabled Persons' (and Children's) Welfare

(1) General Conditions with Respect to Mentally Disabled Persons (and Children)

In terms of the number of treatment/education record books issued, there were 6,485 mentally disabled persons (and children) in Okinawa Prefecture as of March 1997. Of these, 1,862 were under the age of 18, and 4,623 were aged 18 and over.

Table 3-11 Number of Treatment/Education Record Books Issued

	Total number	Most severely or severely disabled	Somewhat or slightly disabled
Under 18	1,862	505	1,357
18 or over	4,623	1,595	3,028
Total number	6,485	2,100	4,385

(2) Welfare Measures for Mentally Disabled Persons (and Children)

In order to facilitate rehabilitative support for the mentally disabled, consultation services are provided at mental disability rehabilitation consultation centers, children's consultation centers, and welfare administration offices. Examinations are performed as needed, accompanied by advice, guidance, and/or judgments, and procedures for admittance to institutional facilities are implemented.

There are currently 34 facilities for the rehabilitative support of the mentally disabled, with a total capacity of 1,860 persons (these consist of 19 rehabilitation facilities with a capacity of 1,130, 15 occupational facilities with a capacity of 720, and one welfare home with a capacity of 10). There are also four facilities for mentally disabled children with a capacity of 200, three facilities for those with limb or body impairments with a capacity of 250, and four facilities for the children with severe mental and physical disabilities with a capacity of 300.

In addition, the local stationing of mental disability consultants (37 throughout the prefecture) provides for enhanced availability of consultation services for the mentally disabled, while in-home (i.e., outpatient) welfare measures include the provision of various articles, equipment, and stipends needed for daily life; special facility commutation programs for physically/mentally disabled children; similar programs for severely disabled children; consultation visitation programs for physically/mentally disabled children (and adults); short term admittance to institutional facilities for physically/mentally disabled children (and adults); locally implemented daily life support programs for the mentally disabled (i.e., group homes); the issuance of treatment/education record books; outreach medical examination visitation; and general anesthesia dental care.

Comprehensive daily life promotion programs for the mentally disabled (recreation classes, programs to encourage participation in volunteer activities, athletic meets, and special consultation programs), as well as national athletic meets and small-scale occupational assistance projects are also conducted as measures to encourage participation in society.

Keywords: Okinawa Prefecture Long Term Action Plan for the Welfare of Disabled Persons, Basic Law Concerning Disabled Persons, Decade of the Disabled in Asia and the Pacific, Normalization, Complete participation and equality, Measures for physically disabled persons, Measures for physically disabled children, Measures for mentally disabled persons (and children), Disabled person's entitlement book, Rehabilitation consultation centers for physically disabled persons, Consultant for physically disabled persons, Home help service programs for physically disabled persons, Day services for physically disabled persons, Facility for children with limb or body impairments, Treatment/education record book, Mental disability rehabilitation consultation center, Children's consultation center, Welfare administration office, Consultant for mentally disabled persons, Measures to encourage participation in society.

REFERENCE

<Japanese>

Daily Life and Welfare Department, Okinawa Prefecture *Seikatsu fukushi gyosei no gaiyo [Overview of Welfare Administration for Daily Living]*.

4. Overview and Achievements of Institutions in Okinawa Capable of International Health and Medical Care Cooperation

4-1 Public Institutions in Okinawa

In Okinawa Prefecture, as we have seen thus far, public health conditions were improved to today's levels from the grossly inferior conditions in the wake of the Second World War. This was accomplished with aid from the United States and through the efforts of the many people connected with health and medical care, providing valuable experience. The following section considers organizations and personnel in Okinawa Prefecture in the field of health and medical care which are capable of international cooperation, with reference to the reinforcement of future cooperative relationships with developing countries.

4-1-1 Okinawa Prefecture

(1) Organizational Overview

The organization responsible for health-related welfare administration in Okinawa Prefecture is the Department of Welfare and Health of the prefectural government. As illustrated earlier in a structural diagram, this department is composed of nine sections, one bureau, and one office. The Welfare and Health Division has authority over the Okinawa Nursing School, the Okinawa Prefectural College of Nursing, and the seven Health Centers. The Health Enhancement Division heads up disease prevention and projects involving countermeasures against infectious diseases, while the Pharmaceutical Sanitation Division directs the Public Health Research Institute. The Hospital Administration Bureau is the organization that controls the seven prefectural hospitals and the 18 outlying island clinics. This organizational structure provides the basis for the implementation of various measures aimed at the maintenance and promotion of the health of the prefecture's residents, as well as the preservation of a healthy living environment.

With respect to international cooperation, the International Exchange Section of the Culture and Environment Department handles various exchange projects. In order to form a foundation for international exchange that takes advantage of Okinawa Prefecture's geographical location and historical background, the International Exchange Section is actively engaged in projects such as working in concert with JICA to promote international exchange projects, training personnel in response to the needs of international society, holding various international conferences, promoting relationships with overseas sister cities, and developing the worldwide network of Uchinanchu (native Okinawans). Projects in the field of health and medical care are undertaken in this context, including the acceptance of overseas technical trainees and clinical medicine training projects.

(2) Achievements in International Cooperation

Overseas exchange continues to be pursued in Okinawa Prefecture in a multitude of fields including economics, culture, and education. The experience accumulated in the area of health and medical care is also being put to work in the acceptance of trainees from overseas, both in programs independently organized by the prefecture and in those conducted together with JICA. Municipalities are also engaged in their own exchange projects involving foreign residents. In addition, medical institutions such as the Okinawa Chubu Hospital are making extensive efforts at international cooperation. Here, let us look at some of the results of overseas cooperation centering on Okinawa Prefecture.

1) Acceptance by Okinawa Prefecture of Overseas Technical Trainees

The objective of this project was to accept trainees from South America and Southeast Asia and equip them with technical skills, so as to promote technical cooperation with developing countries. Training was for approximately one year, and was conducted at host institutions in Okinawa Prefecture. Initiated in fiscal 1982, the program was run for the 17th time in fiscal 1998, with about five participants each year. A total of 97 trainees have been accepted to date. The project was combined in fiscal 1998 with another one that accepts trainees from Fujian Province in China, and the number of designated participants was raised to seven. Project expenditures in that year totaled ¥25.12 million.

Table 4-1 Overseas Trainee Acceptance by Country (1982 – 1998)

Brazil	Argentina	Peru	Bolivia	Philippines	China	Total
23	17	17	22	16	2	97

Source: Kokusai koryu kanren gyomu gaiyo [Overview of International Exchange related Undertakings]; International Exchange Division, Okinawa Prefecture Gubernatorial Public Affairs Office.

2) Acceptance of Trainees from Fujian Province, China

This project is aimed at middle-level nurses from Fujian Province, who are accepted at the Okinawa Chubu Hospital. It covers a period of about six months, during which time participants receive training on various aspects of nursing in Okinawa Prefecture, including clinical nursing and public nursing. From 1994 to 1997, a total of nine trainees were accepted. From fiscal 1998, the project was integrated with the one noted above for overseas technical trainees.

4-1-2 Prefectural Hospitals

(1) Organizational Overview

Five secondary medical care districts have been designated in Okinawa Prefecture. In each of these districts, which include multiple municipalities, prefectural hospitals play important roles as the main hospitals. There are seven prefectural hospitals, with three located in the highly populated Southern

medical district that includes the city of Naha, and one located in each of the other districts. As shown in the following table, the 249 doctors working at prefectural hospitals make up 11.4% of the total, while the 1,358 nurses account for 23.2%.

Table 4-2 Ratios of Medical Practitioners Working at Prefectural Hospitals

(Units: Persons, %)
as of the end of December 1996

Occupation	Name of Public Health Center / Heading	Nago	Ishikawa	Koza	Nanbu	Chubu	Miyako	Yaeyama	Total
Physicians	Overall	137	209	360	864	496	70	53	2,189
	Prefectural Hospital	33	68	0	43	46	29	30	249
	Compositional Ratio	24.1	32.5	0.0	5.0	9.3	41.4	56.6	11.4
Pharmacists	Overall	68	89	284	376	481	40	30	1,368
	Prefectural Hospital	9	16	0	11	10	8	8	62
	Compositional Ratio	13.2	18.0	0.0	2.9	2.1	20.0	26.7	4.5
Nurses	Overall	452	619	1,185	1,917	1,271	237	182	5,863
	Prefectural Hospital	191	356	0	233	250	175	153	1,358
	Compositional Ratio	42.3	57.5	0.0	12.2	19.7	73.8	84.1	23.2
Practical Nurses	Overall	367	384	983	1,463	979	140	66	4,382
	Prefectural Hospital	2	2	0	32	3	6	10	55
	Compositional Ratio	0.5	0.5	0.0	2.2	0.3	4.3	15.2	1.3

Notes: Medical practitioners at Okinawa Prefectural Ryoikuen have been excluded from figures for prefectural hospitals. Medical practitioners at prefectural hospitals include temporary staff filling vacant positions, but exclude non-regular staff.

Source: Medical Affairs Division, Department of Public Health, Okinawa Prefecture.

Prefectural hospitals serve as core hospitals in their respective areas, and importance is attached to advanced, specialized, and emergency medical care functions. The Chubu Hospital in particular features an emergency lifesaving center, at which 35,052 patients were treated in fiscal 1996. This facility plays a major role in the acceptance of emergency patients from outlying islands as well as from the central medical district.

The prefectural hospitals also function as parent hospitals for the prefectural clinics located on outlying islands and in rural areas, providing both material and moral support for the doctors working at these clinics.

(2) Achievements in International Cooperation (Chubu Hospital)

In terms of international cooperation at prefectural hospitals, trainees have been accepted at the Okinawa Chubu Hospital since 1994 in cooperation with JICA Okinawa International Centre. Training has thus been provided to doctors, nurses, and other participants from Southeast Asia, the Middle East, Africa, South America, etc.

Also, Post-graduate Clinical Training has been conducted in cooperation with the University of Hawaii Medical School. This program accepts substantial numbers of participants from all over Japan, and is quite popular.

Table 4-3 Staffing of the Chubu Hospital

(as of June 1, 1998)

Organization and Occupations / Designated Positions and Current Staffing			Designated Positions	Current Staffing	Comparative Increase/Decrease
Diagnosis and Treatment		Physicians	70	72	2
Management	Administration	Managers (Section Chiefs and Administrative Department Heads)	43	43	
		Assistant Managers			
		Clinical Historians			
		Total	43	43	
	Labor	Meal Preparation Workers	9	9	
		Laundry Workers	2	2	
		Custodians			
		Maintenance Workers	1	1	
		Miscellaneous			
		Total	12	12	
	Skilled Labor	Security Workers	3	3	
		Drivers	2	2	
		Telephone Operators	2	2	
		Boiler Technicians	5	4	-1
		Electricians			
		Total	12	11	-1
		Total	67	66	-1
Nursing		Nurses	355	356	1
		Practical Nurses	3	2	1
		Nursing Assistants	15	15	-1
		Total	373	373	
Diagnostic and Treatment Support		Pharmacists	16	16	
		Medical Technologists	35	36	1
		Radiation Technicians	23	23	
		OT/PT	3	3	
		Hearing Examiners			
		Nutritionists	4	4	
		Vision Correction Trainers	1	1	
		Other Support Personnel	1	1	
		Total	83	84	
Other		Computer Technicians			1
		Total			
Grand Total			593	595	2

1) Post-graduate Clinical Training (in Cooperation with the University of Hawaii)

Post-graduate Clinical Training in cooperation with the University of Hawaii was initiated in April 1967. There were not yet any medical education institutions such as university hospitals or training hospitals in Okinawa at that time, and training for medical students was available only at universities on the Japanese mainland. In order to secure some sort of training conducted within the prefecture [i.e., what is currently Okinawa Prefecture], the government of the Ryukyus and the U.S. Civil Administration started Post-graduate Clinical Training in 1967 based on support from the University of Hawaii Medical School. There were relatively few participants at first, but the training content (which incorporated American training methods) gradually came to be held in high regard,

and the program was continued after the return of Okinawa to Japan. From 1975 onward, as the number of applicants exceeded the number of available places, selection has been conducted on the basis of applicants' records and a written examination. The number of participating doctors has increased over the years from just eight at the beginning to about 60 currently. Training staff consist of 68 doctors from Chubu Hospital and two specialist trainer physicians from the University of Hawaii, as well as a large number of other instructors brought in as consultants from both Japan and abroad.

The post-graduate training conducted at Chubu Hospital is firmly rooted in American-style methods, and is aimed at more than just increased ability in specialist fields; the program is characterized by emphasis on the accumulation of clinical experience in wide-ranging areas.

a) Narrow specialization is avoided. For example, instead of being assigned to a particular area, first-year participants are rotated among internal medicine, surgery, obstetrics and gynecology, and pediatrics. Specialist training takes place from the second year, but, rather than focusing on patients in a highly limited area of specialization such as hematology or cardiac surgery, this training involves patient diagnosis and instruction across general fields like internal medicine and surgery.
b) Those mainly responsible for diagnosis and treatment are the trainee physicians themselves. Staff members provide instruction from a supervisory standpoint.
c) Trainees actively participate in debate held in the context of clinical discussions, where critical thinking and analytical capabilities are fostered.
d) Training is conducted not only in the hospital wards, but also in the lifesaving emergency center, where experience is accumulated with respect to a diverse range of emergency patients.

2) Clinical Training for Nurses

a) Clinical Nursing Practical Training Course

The Okinawa Chubu Hospital accepts trainees from overseas, and JICA trainees are accepted as part of the Clinical Nursing Practical Training Course.

This program was initiated at the Chubu Hospital in 1984 under consignment from the JICA Okinawa International Centre (OIC), and has hosted a total of 78 participants over a period of 15 years. Originally known as Clinical Nursing Practical Training for ASEAN Nurses, the name of the program was changed as it began accepting participants from the Middle East, Africa, and Central and South America in addition to ASEAN countries.

Training content is based on current conditions in developing countries, where the introduction of medical technology and advanced medical equipment is occurring at an extremely rapid pace, and qualitative improvements in clinical nursing are urgently needed. Those eligible for training are middle-level nurses from countries desiring participation, and a clinical approach is adopted to help trainees upgrade their existing skills and knowledge by learning

about Japanese nursing. The objective is to develop nurses who can instruct their compatriots in their home countries. An overview of the training content is as follows:

- Course: The training course is divided into the three sub-courses of internal medicine, emergency surgery (external medicine), and maternal and child health, although emergency center and ICU training are integrated into each of these.
- Training Duration: After two months of Japanese language study at OIC, trainees are engaged in the Clinical Nursing Practical Training curriculum at Chubu Hospital for four months from October to January. The duration was for five months until 1990 (the seventh session), but was subsequently revised to the four month, October to January schedule.
- Instructors: The instructors consist mainly of head nurses, chiefs, and team leaders, but doctors also cooperate in the presentation of lectures and clinical sessions (explanations relating to patients admitted to the hospital).
- Training Trips: In addition to practical training at Chubu Hospital, the course also includes observation of eight facilities outside the prefecture in the Kanto, Kansai, and Kyushu areas, as well as 12 facilities in Okinawa Prefecture such as Public Health Center and welfare facilities. This aspect of the program is intended to deepen participants' understanding of the entire spectrum of health and medical care in Japan.

Some 78 trainees have been accepted from 29 countries over a period of 15 years. Major participating countries include Thailand, Sri Lanka, and Pakistan (eight trainees each), the Philippines (seven), Malaysia (six), Indonesia and Nepal (four each), and Myanmar, the Seychelles, and Paraguay (three each).

b) Acceptance of Trainees from Fujian Province, China

This program was started in 1994 as part of the exchange projects that were agreed upon during the Okinawa Prefecture – Fujian Province Summit. It provides for the acceptance of two nurses every year, and is centered on internal medicine nursing. The two participants are at the head nurse level, and are accepted from among three hospitals (each having about 1,000 beds) in Fujian Province: the Fujian Medical University First Attached Hospital, the Fujian Medical University Attached Kyowa Hospital, and the Fujian Provincial Hospital. Participants receive extensive Japanese language training prior to arrival, enabling good communications and solid training. Persons in instruction-related positions from Okinawa Prefecture and Fujian Province also make mutual visits, such that a training follow-up structure is in place. Training content is as follows:

- Implementation of clinical nursing (internal medicine, surgery, obstetrics and gynecology, pediatrics, and management).

- Implementation of public health nursing.
- Overview of nursing education.
- School health activities.
- Current conditions in mental health in Okinawa Prefecture.
- Health and medical care administration and nursing administration in Okinawa Prefecture.
- Health and medical care facilities and their functions.

Box 7: Involvement in the Mexico Family Planning and Maternal and Child Health Project

Kaoru Ashimine
Deputy Director, Okinawa Chubu Hospital
(Basic, Prior, and Completion Survey Teams,
and Domestic Assistance Committee)

The Mexico Family Planning and Maternal and Child Health Project was my first experience with international medical care cooperation, and I have very strong feelings for Mexico as a result. I received a telephone call one day in October 1989 from Mr. Koike of the JICA Medical Cooperation Department, and this turned out to be a request for my cooperation with the Mexico Project. Mr. Koike came to Chubu Hospital to deliver his presentation, and I agreed (albeit with considerable trepidation) to help along with Dr. Inafuku, head of the Obstetrics and Gynecology Department.

On January 7, 1990, as a member of the Basic Survey Team, I set foot on Mexican soil for the first time. During the 12 day stay, we visited Mexico City, which is the biggest urban jumble in the world, as well as other areas such as Guerrero State on the Pacific coast and Veracruz State on Gulf of Mexico side, and we were occupied with our survey activities from early in the morning every day. We spent several days consulting with authorities from Ministry of Health about health conditions in Mexico, and we finally reached an understanding. We had to find out what Mexico was expecting of Japan, and we had to express the extent to which we would be able to cooperate, so it was only natural to hold extensive discussions at the beginning.

The JICA Mexico Office guided us around to the Japanese Embassy, the Ministry of Health, and other government offices, and it was my first experience meeting such high-level officials. At the time I was living in the country on Japan's Southernmost island, and I had never visited Japan's central government offices or met any of our high officials. In Mexico, however, Welfare Minister Kumate had personally requested aid from Japan, and we were deeply impressed as we were ushered into a special audience room with a ceiling that had been painted by a famous artist. Minister Kumate was a pediatrician who was a second generation Japanese-Mexican, and he had previously served as the Director of the National Pediatric Hospital. As a pediatrician myself, I had a chance to personally speak with Minister Kumate at the reception given for the Survey Team. While he could speak hardly any Japanese, he spoke excellent English and French in addition to Spanish.

I have subsequently met many dignitaries from Mexico and Southeast Asian countries, but it is still extremely rare that I have the opportunity to meet Japanese high officials.

4-1-3 Health Centers

(1) Organizational Overview

Enhancement of medical staff is of course required in order to raise the level of public health in developing countries, but there is also a strong need for public health experts. In addition, it is important to build bases for the dissemination of preventive medicine-oriented public health information to local citizens.

There are seven such bases in Okinawa Prefecture, in the form of Health Centers located in each district. These organizations undertake activities in close connection with their respective local areas, and are making major contributions to public health in Okinawa, a prefecture generally characterized by longevity.

At these Health Centers, major roles were played by the former public hygiene nurses, forerunners to the public health nurses of today. These public hygiene nurses conducted public health activities that featured a high degree of local orientation, based mainly at the Health Centers.

In recent years, Health Center activities have embraced a wider range of local activity, including health promotion, local care efforts for patients with incurable diseases and elderly persons requiring home nursing care, as well as instruction aimed at self-regulation by persons involved in businesses pertaining to daily life needs [e.g., restaurants and public baths]. Yet other activities are related to countermeasures with respect to food sanitation, environmental sanitation, and pollution.

Furthermore, based on the Community Health Law which came into effect from April 1997, the roles of the Public Health Centers have changed substantially. Health and welfare services subject to frequent use by community residents have become the responsibility of municipalities, and the Health Centers are being reinforced in terms of wide-area, specialist, and technological functions. Accordingly, Public Health Centers are implementing expanded and strengthened wide-area, specialist services that municipalities find difficult to carry out, such as mental health programs, tuberculosis and infectious disease countermeasures, and home-based care for patients with incurable ailments. Other contingency-based services include surveys and research on community health, the delivery of information to municipalities, and the provision of technical support.

Duties of Health Centers

1) The dissemination and improvement of thinking related to community health.
2) Public health statistics and other statistics related to population shifts.
3) Nutrition improvement and food sanitation.
4) Environmental sanitation, including housing, water supply, sewers, waste disposal, and cleaning.
5) Medical and pharmaceutical affairs.
6) Matters pertaining to public health nurses.
7) Improvement and promotion of public medical care projects.

8) Maternal and child health, and geriatric health.
9) Dental health.
10) Mental health.
11) Matters pertaining to the health of persons requiring long-term care due to diseases for which treatment methods have not yet been determined, or other special diseases.
12) Prevention of infectious diseases such as AIDS, tuberculosis, and venereal diseases.
13) Sanitation/hygiene-related testing and surveys.
14) Other matters pertaining maintenance and promotion of the health of community residents.

Concurrently with the undertaking of these sorts of public health activities, the Health Centers are also involved in the training of human resources, and they accept medical students, public health students, nursing students, nutritionists, etc. as interns and trainees. As bases for community health activities, the Health Centers also provide opportunities for the understanding of their functions, as well of the corresponding occupations. In addition, they provide education and training for municipal employees.

(2) Achievements in International Cooperation

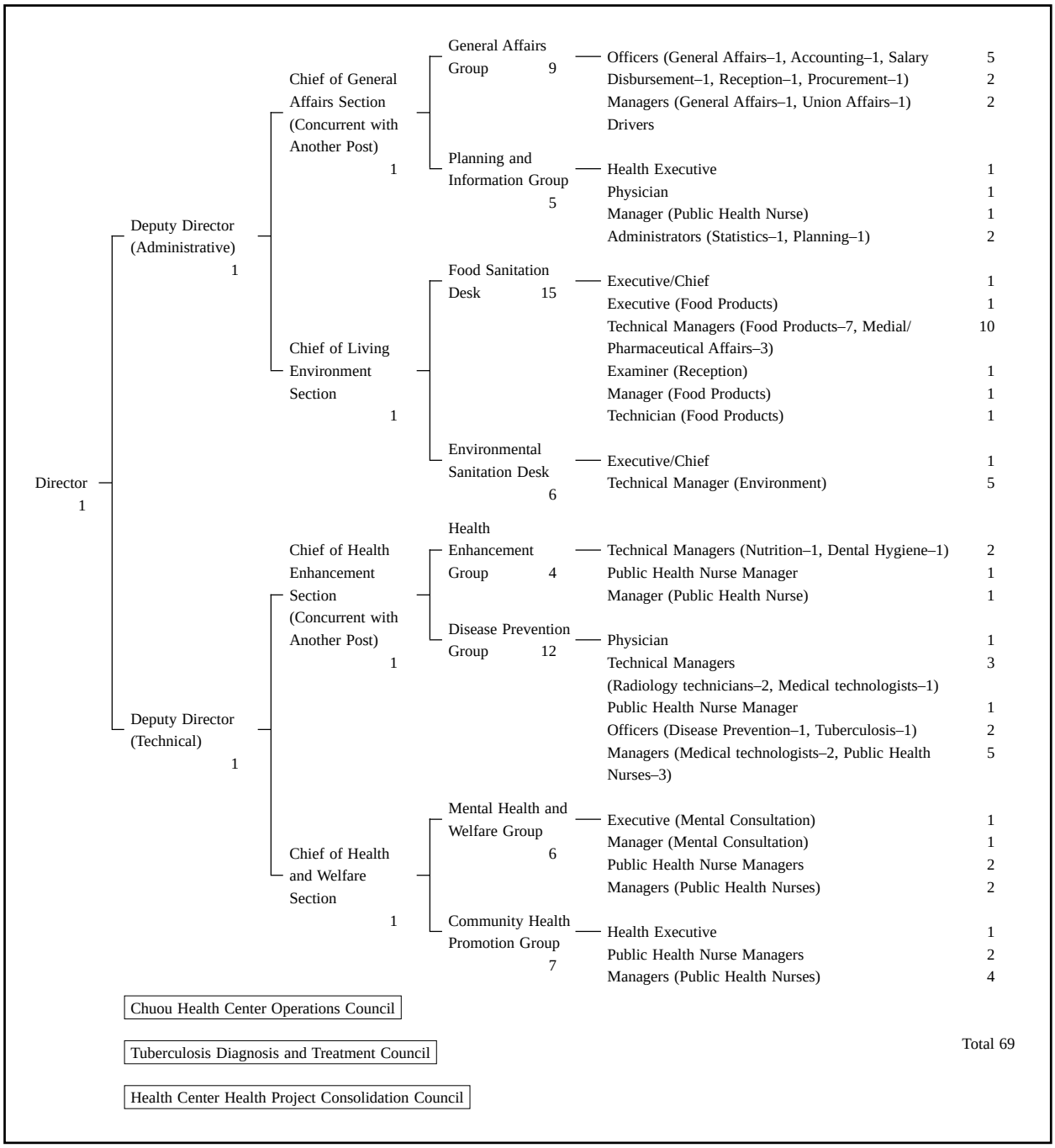
Each Public Health Center accepts trainees from overseas. Trainees obtain an understanding of public health activities in Okinawa Prefecture, and it is anticipated that they will make contributions to the improvement of public health in their home countries. At the Chuou Health Center, trainees from overseas study in the following programs:

1) Counterpart Training in Overseas Medical Cooperation Projects
   Bolivia, Peru, Laos
2) Observation
   China, Malawi, Vanuatu

Also, five trainees were accepted in 1997 from Indonesia, Pakistan, Fujian Province in China, etc. at the Koza Health Center through the Japan Foundation, and 13 trainees were accepted during the same year from Southeast Asia and South America at the Nanbu Health Center. In this manner, each of the Health Centers is accepting trainees from overseas as part of efforts aimed at the development of human resources.

Figure 4-1 Organization Overview of a Health Center (Chubu Health Center)

(as of April 1, 1998)
Unit: Persons



Box 8: An Impressive Health Exhibition in Bolivia

Masako Yamashiro
Executive, Health Enhancement Section,
Ishikawa Health Center, Okinawa Prefecture
(Bolivia National Public Health Improvement Mini-project Expert)

Latin American people are incredibly cheerful. The only people who get exasperated when someone is two or even four hours late are those of Japanese origin. Sometimes, of course, people don't show up at all.

I had been thinking that a good way of creating a forum for thinking about health would be through participation-style exhibitions that would appeal to people who love singing, dancing, and festivals, and that would be open to the general public. About that time, my counterpart supervisor in the Warnes region came in to consult about measles vaccinations, complaining that people weren't coming to events associated with a vaccination campaign. I knew that there might be problems with my idea in terms of organizational structure, but I also knew that I would have to try it out to see if it would work. I brought up the idea of positioning such programs in the context of a health exhibition, and it was finally decided at the liaison conference bring together content covering the pressing issues of tuberculosis, infectious disease, and maternal and child health.

During the roughly three months until implementation, so as to encourage participation by women's association volunteers, I went around together with young doctors from the hospital, the head of the women's association, nurses, and my counterpart to eight different locations from about four o'clock on a number of afternoons to ask people to bring soybean dishes. The work paid off when, on the day of the event, the demonstration corner featuring soy milk, hamburgers, and snacks was a big hit with both children and adults. We had spread the word to neighboring areas and received commitments from volunteers, so we were ready with a rotating staff of over 120 people, including doctors and nurses from the local hospital. As a result, the sections of the exhibition such as child health consultation, pregnancy and family planning, adults, TB, Chagas Disease, parasite consultation, and recreation all went smoothly.

The only way to do it was through trial and error, so the depth of the display content and the methods could probably be improved, but the point was to encourage community participation and a forum for thinking in which people could consider the causes and factors threatening their health, and where they could experience things through their own eyes and ears. Although we borrowed a few audio-visual materials and display materials from the Santa Cruz and the university medical school, questionnaire results showed that the many handmade materials drew positive reactions from the participants. Priority is placed on locating key individuals in terms of the organizational development of women's associations and volunteer groups, and the health exhibition was similarly the result of contacts with leaders in a number of local areas. There was definitely satisfaction to be gained from the making of something out of virtually nothing.

I myself was extremely happy to be able to learn many different things about health from many different people by means of sharing approaches to issues with other professionals and concerned people.

Box 9: Okinawan Kufajushi* and the Construction of a Training Center
(*Rice cooked in broth with vegetables and sometimes with fish/chicken)

Fumiko Higa
Chief, Health and Welfare Section,
Ishikawa Health Center, Okinawa Prefecture
(JICA Solomon Islands PHC Project Expert)

Solomon Islanders generally eat two meals a day, and many people have the same thing in the morning or evening of one day as they do in the morning of the next. This often consists of some kind of potato such as tarot, cassava, or yams stewed in coconut milk together with "cabbage" (a general word for vegetables).

At one point, I was conducting a five-day workshop in the Aola model district, aimed at improving cleanliness and nutrition in the homes of the area and held under the slogan, "Family health is in the hands of women." The workshop was attended by women leaders from the various villages, and covered various practical topics such as housecleaning, cooking and other nutrition-related instruction, sewing (both by hand and using a sewing machine), and children's health. The workshop also enlisted the cooperation of local public health staffers, primarily involving a daily life improvement promotion officer and a male public health nurse of a health clinic, and we practiced making a toilet.

Some of the women were familiar with the concept that one should eat 30 different foods each day, but the actual situation was that people were getting five a day. The cooking class menu consisted of Okinawan kufajushi (rice cooked in broth with vegetables and sometimes with fish/chicken), a bread reminiscent of Indian nan, vegetables stir-fried in coconut milk, and a stone-baked mix of vegetables wrapped in banana leaves. The ingredients consisted of rice and locally available food items that the participants had brought with them. We made the kufajushi with rice, potatoes, and lots of vegetables cooked together in coconut milk, and it proved quite popular. The village men, who had been reluctant have the women leaders participate in the workshop because of the different religious sects, told me afterwards each time we met, "Fumiko, that was a great workshop. What are you going to teach them next?" It seemed that the fun of eating stone-baked or stir-fried vegetables wrapped in nan bread and the deliciousness and ease of preparation of kufajushi had made meal times something to look forward to for village men. I felt quite gratified.

There was a problem, however, in that we didn't have a place to hold a workshop in my village, so we boarded up a church in an abandoned village and used that. Some of the participants had to walk eight hours or more to attend, and we needed to have someplace where we could spend the night and cook for ourselves.

I began consulting with local women and the chief of the village in order to build a women leaders' training center using grant aid for grassroots project from the Japanese Embassy, and we applied for the funds. We succeeded in securing the highest allowable budget, and we built the training center for the villagers. The people were extremely happy about it, and the work got into high gear near the end so as to meet the project completion date. Three days before I was to return to Japan, one of the country's highest officials participated in the opening ceremony, and we had lots of traditional dancing and choral music in the rain. I was happy to see the smiling faces of all the people from the area who would use the new center, not just the women, and I was pleased about the popularity of kufajushi, but what really made me feel in my heart that I had accomplished something was when I heard later that the men leaders of the village leader training had collected money from each household so that they could build a toilet for people to use.

Box 10: Health Nurse Activities in the Solomon Islands Primary Health Care Promotion Project

Sachiko Nakazato
Professor, Okinawa Prefectural College of Nursing
(JICA Solomon Islands PHC Project Short-term Expert)
Fumiko Higa
Chief, Health and Welfare Section,
Ishikawa Health Center, Okinawa Prefecture
(JICA Solomon Islands PHC Project Expert)

In August 1993, with the dispatch from Okinawa Prefecture of health nurses, the area of nursing education was initiated. Three long-term experts participated over a period of three years, as well as one short-term expert (who visited twice).

Major Activities

1. Organization of information on health and medical nursing and the undertaking of surveys to achieve an understanding of the contemporary situation.
2. Coordination with the Nursing Department of the Solomon Islands government Ministry of Welfare and the Guadalcanal Province Nursing Department, with designation of the Aora model district for the PHC pilot project.
3. Aora PHC pilot project activities established as a means of training not only nursing staff, but nursing students as well.

(1) Family Registration

Nursing staff conducted district surveys, and a grasp was obtained of current conditions with respect to local residents' living environment, the state of family health, and new and abandoned villages. This led to a wider perspective on people's health. As there is no organized system of registration in the Solomon Islands, interest was shown at a national meeting of medical officers (provincial representatives), and a proposal was made to use for better understanding of population movements, etc.

(2) Vital Statistics Calendar

In order to understand village conditions on a monthly basis, reports were made following village leader training sessions by means of a calendar form that had been designed to be used even by people with low literacy levels. Including methods such as family registration, the vital statistics calendar was applicable for the accurate updating of population statistics and as a health management index for families and villages. It was also deemed to be an effective tool for communications linking clinics and villages, as well as facilitating an interest in health on the part of the villagers. Furthermore, it helps in the evaluation of the roles of village leaders participating in health development for local residents.

(3) Health Assessment

Health assessment is implemented by going around to the various villages to assess the health of the local people. For nursing staff engaged entirely in treatment activity at clinics where doctors are not present on a daily basis, this enables greater emphasis to be placed on the understanding of health conditions, as well as improvements in health knowledge and assessment techniques.

(4) Maintenance of Good Conditions at Clinics

This stresses recognition of the importance of cleanliness and tidiness at clinics, as well as of the keeping and utilization of records, together with implementation. The importance of establishing and maintaining emergency contact radio communications systems is recognized for clinics without telephones.

(5) Village Leader Training

Training sessions are held for village representatives and women's association representatives in order to strengthen district organizations. Village conditions and problems are presented by the local citizens, and these issues were made the subjects of group discussions. This provided opportunities for consideration and action with respect to participation-type PHC.

(6) Establishment of Women's Centers

A Center for women's and local activities was established using grant aid for grassroots projects, and such activities were intensified.

(7) PHC Workshops

Workshops were held in which nurse leaders from the various provinces participated. Stimulating discussions focused on the Aora PHC Pilot Project, nurses' job descriptions, PHC policy, etc. The workshop format differed from the conventional lecture style, and received high marks for enabling participants to study about issues that affected them more directly.

4. Establishment of a Model District

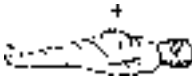
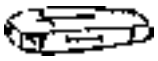
Some 135 small villages (991 households, representing a population of 4,687) located in the coastal and mountainous areas served by the Aora Clinic comprised the Aora model district. Nursing staff engaged in treatment of patients at clinics where doctors are not normally present studied the importance of local public health activities. Nursing staff leaders from Guadalcanal Province and the national Ministry of Welfare also participated in these activities and studied the same content. It should be noted that nursing staff leader development for postwar Okinawa public health nurses was conducted by USCAR nursing specialists. The need is felt for the setup within a short period of time of model districts for continuing education.

5. Support System

After the return home of the short-term expert, a support system was established for the long-term experts conducting local activities. It can be quite difficult for a health nurse to undertake such activities in local areas where information is lacking, and a support system is a necessity. Required materials were sent in, and telephone and fax communications were used to obtain information and advice for the resolution of problems. This system provided for wideranging response, centered on the short-term expert who had returned to Japan, in addition to administrative offices and persons involved in health nurse education. It was considered to be more effective for the system to focus on someone with local experience, even if such experience had been brief. The system was a major source of support for the locally posted expert.

VITAL STATISTICS CALENDAR 1995 APRIL

Population [ ] Number of household [ ] Reporter:

						
DATE	DAY	**STILL BIRTHS** BABI DAE BIFOA BON	**BIRTHS** PIKININI BON LAEFI	**INFANT DEATHS** PIKININI DAE BIFOA WAN IA	**MATERNAL DEATHS** MOTHER DAE TAEM BABULE, OR DAE INSAED 6 WIKS AFTA BONEM PIKININI	**DEATHS (Other)** DAE (NARA KAEN)
1	Sat	○○○	○○○	○○○	○○○	○○○
2	Sun	○○○	○○○	○○○	○○○	○○○
3	Mon	○○○	○○○	○○○	○○○	○○○
4	Tue	○○○	○○○	○○○	○○○	○○○
5	Wed	○○○	○○○	○○○	○○○	○○○
6	Thu	○○○	○○○	○○○	○○○	○○○
7	Fri	○○○	○○○	○○○	○○○	○○○
8	Sat	○○○	○○○	○○○	○○○	○○○
9	Sun	○○○	○○○	○○○	○○○	○○○
10	Mon	○○○	○○○	○○○	○○○	○○○
11	Tue	○○○	○○○	○○○	○○○	○○○
12	Wed	○○○	○○○	○○○	○○○	○○○
13	Thu	○○○	○○○	○○○	○○○	○○○
14	Fri	○○○	○○○	○○○	○○○	○○○
15	Sat	○○○	○○○	○○○	○○○	○○○
16	Sun	○○○	○○○	○○○	○○○	○○○
17	Mon	○○○	○○○	○○○	○○○	○○○
18	Tue	○○○	○○○	○○○	○○○	○○○
19	Wed	○○○	○○○	○○○	○○○	○○○
20	Thu	○○○	○○○	○○○	○○○	○○○
21	Fri	○○○	○○○	○○○	○○○	○○○
22	Sat	○○○	○○○	○○○	○○○	○○○
23	Sun	○○○	○○○	○○○	○○○	○○○
24	Mon	○○○	○○○	○○○	○○○	○○○
25	Tue	○○○	○○○	○○○	○○○	○○○
26	Wed	○○○	○○○	○○○	○○○	○○○
27	Thu	○○○	○○○	○○○	○○○	○○○
28	Fri	○○○	○○○	○○○	○○○	○○○
29	Sat	○○○	○○○	○○○	○○○	○○○
30	Sun	○○○	○○○	○○○	○○○	○○○
TOTAL						

Grand Total of Deaths	

4-1-4 Okinawa Prefectural Institute of Health and Environment

(1) Organizational Overview

The Institute got its start in 1946 as the Central Hygienic Laboratory, located within the Okinawa Chubu Hospital, and the current name was adopted in 1994 following a number of reorganizations over the years. The main activities of the Department of Biological Sciences consist of reference work related to diseases caused by microorganisms and parasites, research on blood test prevention methods, ecological investigation and research on dangerous animals, research on preventative methods, ecological investigation and research on habu pit vipers, and research on their extermination. The Department of Environment and Living Health Sciences conducts investigations and prevention technology-oriented research on air and water pollution, soil run-off, and other forms of pollution.

(2) Achievements in International Cooperation

Trainees in JICA's Public Health and Environmental Pollution Analysis Technician Course have been accepted since 1983, and this course was conducted for the 16th time in fiscal 1998. The training period is six months (five months from fiscal 1997), and the course is targeted at persons from developing countries who are involved in public health and environmental pollution control operations. Training content consists of lectures, practice sessions, and facilities observation tours to provide for the acquisition of knowledge and techniques, ranging from basic to practical, as related to public health and environmental pollution control. Five trainees from four countries were accepted in fiscal 1997, studying in three sub-courses: food chemistry (Chile and Kenya), air pollution (Mexico), and water contamination (China and Kenya).

Trainees are also accepted in exchange projects between Okinawa Prefecture and Fujian Province. Two environment-related staff members from Fujian Province were accepted for about one month during fiscal 1998 for the study of topics such as maintenance and control of atmospheric monitoring, investigation of acid rain, and water quality measurement methods.

In addition to the acceptance of long-term trainees as described above, some 64 other trainees have been welcomed from overseas in programs such as JICA's Infectious Disease Countermeasures Course for Peru.

4-2 University of the Ryukyus

(1) Organizational Overview

Faculty of Medicine of the University of the Ryukyus consists of two departments, the Department of Medicine, and the Department of Public Health, as well as the Attached Hospital. The Medical School has a faculty of 183 (including assistants) and an administrative staff of 83, while the Attached Hospital has a faculty of 91, an administrative staff of 100, and a nursing staff (including nursing

assistants) of 347.

There are 95 entry places each year for students in the Department of Medicine, and 70 in the Department of Public Health, with 30 and ten places respectively in the corresponding graduate programs. Even allowing for the fact that a certain percentage of these graduates will accept jobs outside Okinawa Prefecture, it is clear that the University of the Ryukyus Faculty of Medicine is making a substantial contribution to human resources supply in the local fields of medicine and public health.

As of May 1999 there were three foreign students in the Department of Medicine and two in the Department of Public Health, with 16 and nine enrolled respectively in the corresponding graduate programs. Thus, the Faculty of Medicine is contributing to the development of overseas human resources as well.

Table 4-4 Staffing of Faculty of Medicine, the University of the Ryukyus (as of May 1999)

Heading		Medical School	Attached Hospital
Faculty	Professors	47	2
	Associate Professors	33	2
	Instructors	10	28
	Assistants	93	59
	Totals	183	91
Administrative Staff, Levels 1 and 2		83	100
Medical Technologists, Level 2			67
Nurses, Level 3 (Including nursing assistants)			347
Teaching Staff Level 1		7	
Totals		273	505

Okinawa-Asia Medical Research Center Attached to Faculty of Medicine

This center was established in April 1998 by ministerial ordinance. In conjunction with the abolishment of the Global Medical Research Center (composed of a single department and set up for a limited period of ten years from 1988), the new research center was launched with three sections.

The goal of the center is to make use of the latest medical technology in the investigation of diseases in Okinawa Prefecture, as well as to disseminate the findings in various Asian countries. The sections making up the center are:

1) Infection Immunity Research Section
2) Molecular Biology Research Section
3) Environmental Epidemiological Research Section

(2) Achievements in International Cooperation

Here, public health medical care support activities conducted for the benefit of Laos through the

joint cooperation of Faculty of Medicine, the University of the Ryukyus and JICA are described.

Laos-JICA-WHO Public Health Project

1) Project Background and Overview

This project got its start in 1990, when then-Foreign Minister Nakayama visited Laos, which was pursuing liberation-oriented policies, and promised active support for democratization. Aimed at the dissemination and improvement of general public health services based on a foundation of public health, as well as reductions in the contraction and mortality rates of infectious diseases, technical guidance associated with the project began in October 1992 with the University of the Ryukyus Faculty of Medicine and the International Medical Center of Japan as the supporting institutions.

The original period of technical cooperation was stipulated as five years, but this was extended to a sixth year at the request of Laos, so as to better ensure technology transfer. Cooperation activities for the achievement of the above-stated objectives consisted not only of primary health care (PHC) activities in Khammouan Province, but also a wide range of other activities such as nationwide polio eradication and EPI efforts centered on the National Institute of Hygiene and Epidemiology (NIHE), functional reinforcement of NIHE virus and bacteria laboratories, functional reinforcement of the malaria and parasite laboratories of the Institute of Malariology, Parasitology & Entomology (IMPE), and strengthening in the area of conservation and management of materials and equipment in the Ministry of Health and various research facilities.

2) Content of Activities

During the project implementation period, Associate Professor Nozaki of the University of the Ryukyus visited as a short-term expert on two occasions (in 1994 and 1996), and subsequently served as chief advisor for the project. The plan was to be carried out in a region suffering from a shortage of medical care resources, and the model region was selected to be Khammouan Province, located 24 hours by car from Vientiane, the capital of Laos. Nurses were dispatched in particular, and a unique feature of the plan was the undertaking of health guidance visitation in the public health sector.

The project had the following objectives:

- Improvement of the provision and use of comprehensive health and medical care services at all levels.
- Reduction of contraction and death rates from major infectious diseases including polio.
- Promotion of activities that otherwise support PHC.
- Reinforcement of health planning, operations, and information systems.

Activities aimed at the accomplishment of these objectives were conducted on the basis of close cooperation among Japan, the government of Laos, and WHO. Inputs from Japan are shown in the

following table, amounting to cumulative totals from 1992 to 1998 of 22 long-term experts, 49 short-term experts, and acceptance of 22 trainees.

Table 4-5 Japan Side Inputs to Laos-JICA-WHO Public Health Project

(Unit: Persons)

Fiscal Year		1992	1993	1994	1995	1996	1997	1998	Cumulative Totals
Long-term Experts	New	4	1	4	4	8	1	0	22
	Returned	0	0	5	0	4	7	6	22
	Continuing	0	4	2	4	4	12	6	
Short-term Experts		2	6	6	8	17	10	0	49
Trainees Accepted		1	4	4	2	5	3	3	22

Dispatch of Experts: (Long-term) Chief advisor, administrative coordination, PHC, EPI virology, bacteriology, parasitology, conservation of equipment.
(Short-term) PHC, EPI, virology, bacteriology, parasitology, conservation of equipment.
Acceptance of trainees : PHC, EPI, virology, bacteriology, parasitology, conservation of equipment.
Provision of equipment : IEC equipment, research equipment, reagents, freezers, vehicles, etc.

Enthusiasm on the part of both the Japanese side and the Laos country counterparts allowed the smooth transfer of technology. The activities covered a broad range of fields, and definite results were obtained through solid mutual cooperation in each area. It was determined that the original objectives were sufficiently achieved, and the project was concluded in 1998.

3) Future Activities

In order to ensure the certainty of the technological transfer to date, expanded technical cooperation has been developed in the form of an EPI pediatric disease prevention project scheduled to run from three years from October 1998, the dispatch of individual experts in malaria control and in the conservation of equipment, and the establishment of a second-country training course in the area of PHC in Khammouan Province which is intended as a starting point for nationwide expansion. In addition, technical cooperation and grant aid have been applied in a project since 1999 for the rebuilding of the Vientiane Municipal Setthathirath Hospital.

4-3 Private Sector Institutions

4-3-1 Okinawa Nursing Association

(1) Organizational Overview

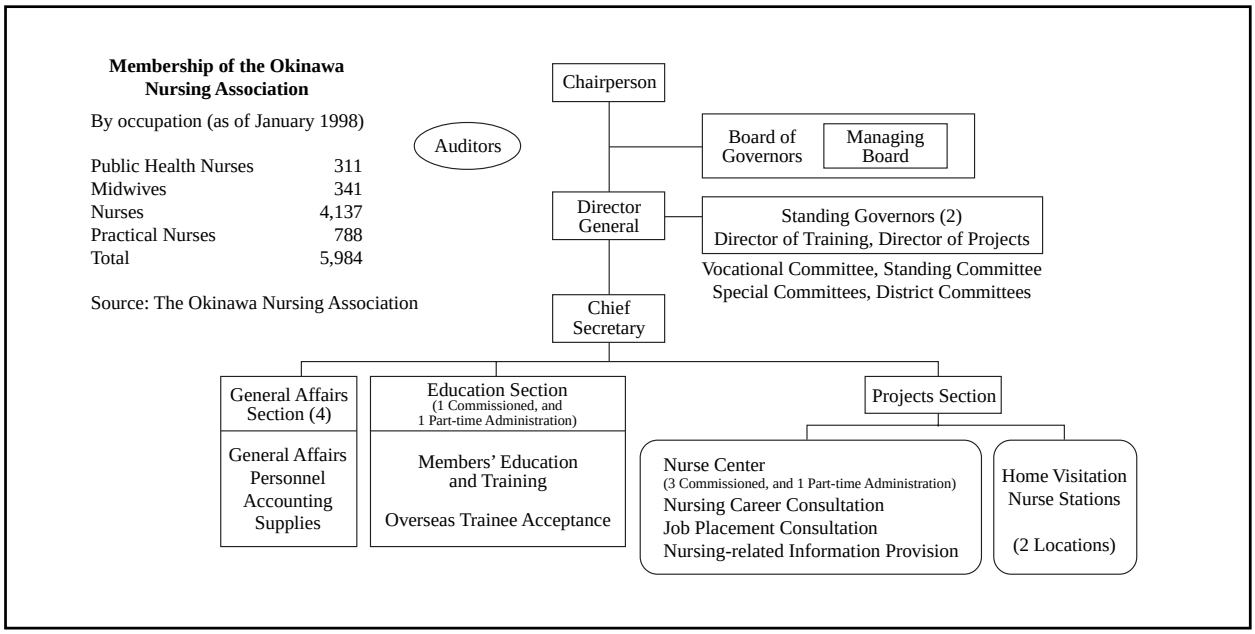
The Okinawa Nursing Association is an organization composed of public health nurses, midwives, nurses, and practical nurses. The goals of the association are to improve the professionalism of nursing

staff and to contribute to the enhanced health of prefectural residents and the development of welfare services through nursing-related professional training and academic research.

The Okinawa Islands Nursing Association was founded in 1951, later changing its name to the Ryukyus Nursing Association, and finally to the Okinawa Nursing Association, which became a member organization of the Japan Nursing Association in 1971 just before the return of Okinawa to Japan. The association was incorporated in 1986.

The major activities of the association cover a wide range, including training for members, qualitative improvements in nursing staff through participation in professional meetings and conferences, contributions to local society through such means as home visitation and telephone-based health consultation services, career consultation for nursing professionals, and international cooperation such as overseas nursing exchange and the acceptance of trainees from neighboring countries.

Figure 4-2 Executive Organization of the Okinawa Nursing Association



(2) Achievements in International Cooperation

In order to conduct nursing exchange with countries in Asia and Central and South America, as well as to contribute to international society, the Okinawa Nursing Association was commissioned by the JICA Okinawa International Centre from fiscal 1994 to provide training for overseas trainees. The status of trainee acceptance is shown in the following table, with the bulk of this activity centering on South American countries.

Training courses include an infectious disease countermeasures course, which focuses on public health-related problems and analysis and is intended to foster effective responses, and a community health leadership course, which allows participants to obtain knowledge and skills connected with health activities and is targeted at better understanding of the importance of public health. Training content

centers on the activities of public health nurses history of health-related activities, including infectious disease countermeasures in Okinawa over the last 50 years. The program also includes practical training at facilities involved in public health, such as health centers, municipal government offices, hospitals, and schools.

Table 4-6 Status of Acceptance of Overseas Trainees

Country	Course	Fiscal Year	Participants	Duration	Occupations
Peru	Infectious Disease Countermeasures	1994	11	1 month	Doctors and other public health managers
		1995	14		
		1996	10		
		1997	13		
Bolivia	Community Health Leadership	1994	5	3 months	Community nursing supervisors
		1995	6		Community public health supervisors (doctors)
		1996	5		
		1997	5		
		1998	5		
	Local Public Health	1997	1	2 weeks	
Paraguay	Community Health Leadership	1996	5	3 months	Community nursing supervisors
		1997	5		Community public health supervisors (doctors)
Panama	Local Public Health	1997	2	2 weeks	

Source: The Okinawa Nursing Association, 1999 nendo tsujo sokai jigyou hokoku [Fiscal 1999 Regular Meeting Activity Report].

4-3-2 Association of Medical Technologists

(1) Organizational Overview

The Association of Medical Technologists was founded in 1986, and had 481 members as of 1998. According to Imu gaiyo [Medical Affairs Overview] (fiscal 1997), there were 504 clinical medical technologists in Okinawa as of October 1996.

Table 4-7 Membership in the Association of Medical Technologists

(as of August 10, 1998)

Fiscal Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Number of Members	307	331	353	374	406	406	406	414	417	417	454	474	481

Source: Association of Medical Technologists

According to the articles of establishment, the purpose behind the founding of the Association of Medical Technologists was "To conduct public service projects and activities that respond to the needs for 1) the provision of structural reinforcement and promotion for more active participation in public service community health and medical care activities having increasingly social elements, and 2) locally-oriented health care and the health maintenance of local residents, in addition to the group activities that have been carried out thus far." The following sorts of projects are conducted by the Association of Medical Technologists so as to more actively contribute to community health care.

1) Public service projects

   The Association provides support for various cooperating organizations; blood donation promotion groups, lung cancer and uterine cancer workshops by the Okinawa Prefecture Life and Welfare Department; projects conducted by the Okinawa Prefecture Public Health Association; the Okinawa Prefecture Health Facilitation and Promotion Council, etc.

2) Hosting of workshops for cell diagnosis practitioners

   Each year from fiscal 1998 – 1993, one or two cell diagnosticians were trained.

3) Hosting of public lectures for prefectural residents

   The Association held a "Lecture on AIDS" in February 1993 at the Palette Citizens' Theater.

4) Precision maintenance investigation projects

   As part of its community health activities, and at the request of hospitals and public health-related laboratories, the Association has conducted life science surveys centered on the independent investigation of precision maintenance levels.

5) Workshops

   Seven workshops were held 7 in FY1989, 18 in FY1990, 2 in FY1991, 13 in FY1992, and 32 in FY1993. Many of these were in the areas of blood testing, clinical chemistry, and physiology. Also, the annual meeting of the Japan Association of Medical Technologists was held in Okinawa Prefecture in May 2000, and an international exchange forum was scheduled as part of this event. This part of the program was highlighted the international contributions of medical technology and the role of Okinawa Prefecture.

(2) Achievements in International Cooperation

In terms of international cooperation activities, the Association of Medical Technologists dispatched three of its members over the period from 1996 to October 1999 in order to contribute to improvements

Table 4-8 Training Content

Training Category	Training Content	Training Locations (Okinawa Prefectural Government)
• Orientation	Hospital Management Bureau, International Exchange Section, Prefectural Welfare and Health Department	Prefectual Government
	Infectious disease countermeasures in Okinawa Prefecture	Welfare and Health Policy Division
	Health administration in Okinawa Prefecture	Health Enhancement Division
	Maternal and child health measures in Okinawa Prefecture	Health Enhancement Division
• Background to the establishment of the Association, and content of operations • Organization and occupations within testing institutions • Legal foundations of testing operations • Eyesight, fundus, and other testing	Workshops, observation and lectures covering all aspects of training related to understanding the framework of medical examination operations	Okinawa General Health Care Association
• General analyte testing • Blood transfusion testing • General physiological testing • The role of emergency testing	Workshops and lectures on analyte testing, blood testing, and physiological testing	Testing Department of Okinawa Chubu Hospital
• Parasite testing • Hygienic animal testing • Water quality testing	Workshops on parasite testing and water quality testing, with supplementary observation and lectures	Okinawa Prefectural Institute of Health and Environment
• Abdominal ultrasound testing • General blood testing	Workshops and lectures to support understanding of abdominal ultrasound testing	Prefectural Naha Hospital, Testing Department
• Public health activities in Okinawa Prefecture • Prevention of infectious diseases • Intestinal bacteria	Lectures on public health activities, explanations of the prevention and current status of HIV, as well as observation	Chuou Health Center
• Conclusion of training		
• Evaluation session		Okinawa Prefectural Government
• Return to home country		

in the public health environment in the Republic of Bolivia. One counterpart trainee was also accepted for training in Okinawa Prefecture.

This project was initiated as a result of an offer of cooperation extended by then-Governor Ota of Okinawa Prefecture in conjunction with the 1994 festivities surrounding the 40th anniversary of the introduction of the Colonia Okinawa settlement to Bolivia. Subsequently, discussions between JICA and the Bolivian side were held to determine the specific area(s) and form(s) in which such cooperation might be provided. These discussions revealed a set of problems in Bolivia involving very high death

rates among pregnant women, and extremely high infant mortality, leading to distortion of the generational composition of the population and a serious situation in which little increase could occur in the working population. Malnutrition, chronic diarrhea, respiratory diseases such as tuberculosis and pneumonia, and the prevalence of parasites were cited as serious issues interfering with the health of the general population, including high perinatal and infant mortality.

The project, based in Santa Cruz, was targeted at utilizing the experience of Okinawa Prefecture in the raising of public health awareness among local residents, thereby helping to prevent disease and enhance health.

The Association of Medical Technologists dispatched two highly experienced medical technologists and one public health nurse, who are currently engaged in cooperative activities. A counterpart trainee will be also accepted for a training period of about two months that focus on the structure of public health administration in Okinawa Prefecture, infectious disease countermeasures, testing procedures, etc.

4-4 NGOs (Non-Governmental Organizations)

(1) Overview of NGOs in Okinawa Prefecture

There are over 50 NGOs in Okinawa Prefecture, and these organizations are conducting wide-ranging activities in various fields. However, only a limited number of these are involved in international cooperation. Patterns of activity among NGOs in the field of international cooperation can be generally categorized in the following manner.

1) Activities undertaken from a humanitarian standpoint (e.g., Cambodia-Okinawa Friendship Association).
2) Activities aimed primarily at the promotion of business projects (e.g., Okinawa-Vietnam Friendship Association)
3) Activities in scientific areas (e.g., International Society for Mangrove Ecology).
4) Activities related to emigration and emigrants (e.g., Okinawa-Bolivia Association and Hawaii Association).

While NGOs are involved in various [international] activities in Okinawa Prefecture, those in the area of health and medical care are even more limited in number. Those that maintain ongoing activities include the Cambodia-Okinawa Friendship Society, Association for cooperate Asian Person with Disability, and the Okinawa chapter of Médecins sans Frontières.

(2) International Cooperation Activities

1) Activities of the Cambodia-Okinawa Friendship Association

a) History

This organization started with interaction between Mr. Yoshida, the current chairperson, who was a former director of the Okinawa Institute of Public Health (now known as the Okinawa Prefectural Institute of Health and Environment), and Dr. Summit from Cambodia who was sent to study in Japan by the Cambodian Red Cross. Activities gradually expanded, and the organization was officially founded in 1989 with the objective of encouraging more widespread participation by residents of Okinawa Prefecture. At the time, Pol Pot factional guerillas were still active in Cambodia, and social structures were in a state of disarray, particularly in terms of inferior public health conditions. Of a former Cambodian population of nine million people, the number of people killed in the civil war or who died of starvation and infectious disease is approximately four million. The majority of the people continue to live in a state of poverty, educational levels are low, and public health conditions are poor. NGO activities were thus originally animated by the desire to be of service to the people of Cambodia.

b) Activities

The activities of the Association are based on the desire to continue exchange on an equal footing in the spirit of reciprocity. Mutual exchange is emphasized, as in an activity where rosewood seeds are sent from Cambodia, sprouted, and distributed in order to contribute to tree-planting efforts in Okinawa Prefecture, with the funds thus obtained used to send medical equipment to Cambodia.

At present, a unique activity known as the Zero Parasite Strategy is being conducted by the Association and is attracting attention from other NGOs. Parasite prevention was chosen as the target because it does not require the huge amounts of money and human power necessary for infectious disease prevention, it can be implemented on a local basis, and the results can be easily seen. The physical base for the activity consists of a hut-like clinic erected in one of the poorest districts of Phnom Penh, from which parasite prevention work is conducted. Of special note are the cooperative arrangements with local entities and the training of human resources. Dr. Summit plays a central role on the Cambodian side, offering free examinations and providing training courses for medical technologists running for about ten days, in addition to running his own professional clinic. These sorts of cooperative arrangements are starting to demonstrate results.

Instruction in preparing fields for vegetables and root crops such as leaf mustards and red potatoes is also provided in order to improve nutrition. Furthermore, assistance measures for education are currently being considered, and efforts are being made to establish sister school relationships between educational institutions in Okinawa Prefecture and in Cambodia.

2) International Society for Mangrove Ecology (ISME)

a) History

Recent years have seen the linking of tropical forest depletion to the problem of global warming, and this is now being taken up as a global-scale environmental issue. Accordingly, conservation and reforestation are urgent tasks. Tropical forests include mangrove forests, and, although the percentage of total tropical forest area is small, mangrove forests are characterized by conservation functions with respect to both land and sea ecosystems, and their ecological role is particularly important.

As Okinawa Prefecture is the only area of Japan having extensive mangrove ecology, the Okinawa International Mangrove Association (OKINAM) was founded in June 1989 with the objectives of mangrove forest conservation, diffusion, and related educational efforts. The International Society for Mangrove Ecology (ISME), a mangrove-related organization operating on a global scale, was successfully invited to relocate to Okinawa Prefecture in August 1990, and was established as an official foundation authorized by the prefectural governor in October 1992.

Table 4-9 Groups Involved in Mangrove Ecology Conservation

(as of March 31, 1997)

Name	Address	Content of Activity	Membership	Chairperson
International Society for Mangrove Ecology	1F, Faculty of Agriculture, University of the Ryukyus, Senbara 1 Banchi, Nishihara-machi	International organization for mangrove ecology	620 persons and 30 groups in 72 countries	Sa-nga Sabasuree (Thailand)
Okinawa International Mangrove Association	4F, Faculty of Agriculture, University of the Ryukyus, Senbara 1 Banchi, Nishihara-machi	Investigative field research in Okinawa Prefecture	121 persons and 17 groups in Japan	Kiyoshi Yamazato Professor, Meio University

b) Activities

ISME is actively conducting a wide a range of activities, including the promotion of investigation and research concerning mangrove ecosystems, the collection of academic and technical information, and research, training, and the promotion of diffusion with respect to sustainable management methods, rational utilization, conservation, and functional recovery of mangrove forests. The Society is accordingly engaged in the development of educational materials for the advancement of such activities, the holding of international symposiums and technical training sessions, the publication of a scientific journal, research projects, and other forms of promotion and assistance.

Results achieved thus far with financial support from other organizations include the creation of technical manuals for mangrove reforestation, the development of an atlas showing the worldwide distribution of mangrove forests, the production of a video tape on mangrove ecology and its

importance in Fiji, reforestation activities and the development of seedling fields in Pakistan, and the holding of technical training sessions on mangrove planting. Other work includes the hosting of symposiums, the publication of a newsletter, and the publication of reports and research papers.

In the most recent fiscal year, investigators were dispatched to Thailand and Vietnam to conduct status surveys and obtain materials in order to collect information and support diffusion projects relating to mangrove ecosystems. Technical guidance was also provided to Indonesia and Vietnam with respect to mangrove reforestation and the development of seedling fields. As part of training and education promotion efforts, two trainees from overseas were accepted for training in the Philippines, and six participants from four countries were accepted for the Sustainable Mangrove Ecosystem Management course by JICA. Okinawa Prefecture features mangrove ecological conditions in compact form, thus making it a suitable location for effective training using this course, and a cumulative total of 26 participants from 23 countries have taken the course since fiscal 1997 (including fiscal 1998). Furthermore, consultation and cooperation with both public and private institutions has allowed the presentation of exhibitions, attendance at environmental conservation conferences, the dispatch of panelists to symposiums, etc. Currently, the project that is being most intensively focused upon is the development of an international mangrove database known as GLOMIS (i.e., global mangrove information system).

Funding sources for ISME activities include membership dues and project consignment fees from government-affiliated auxiliary organizations, and international cooperation activities are being undertaken in a stable manner.

REFERENCES

<Japanese>

Cambodia-Okinawa Friendship Association. *Cambodia-Okinawa yuko no mura kensetsu wo mezashite [Towards Construction of the Cambodia-Okinawa Friendship Village]*.

Chuo Health Center (1997) *Hokenjo katsudo gaikyo [General Situation of Public Health Office Activities]*. Okinawa Prefecture.

Okinawa Association of Medical Technologists. *Dai 49 kai Nihon rinsho kensa gishi kai gakkai (Okinawa) gakkai kikaku-sho [Planning Document for the 49th Meeting (Okinawa) of the Japan Association of Medical Technologists]*.

Environment and Health Department (1997) *Kankyo hoken gyosei no gaiyo [Overview of Environmental and Health Administration]*. Okinawa Prefecture.

Koza Health Center (1997) *Hokenjo katsudo gaikyo [General Situation of Public Health Office Activities]*. Okinawa Prefecture.

Life Promotion Department, Okinawa Prefecture (1997) *Seikatsu fukushi gyosei no gaiyo [Overview of Life Welfare Administration]*.

Medical Affairs Division, Environmental and Health Department, Okinawa Prefecture (1997) *Imu gaiyo [Medical Overview]*.

Office of the Governor of Okinawa Prefecture, International Exchange Section (1997a) *Okinawa Ken kango/kaigo no genjo [The Current State of Nursing and Home Nursing in Okinawa Prefecture]*. Okinawa Prefecture.

Ibid. (1997b) *Kokusai koryu kanren gyomu gaiyo [Overview of International Exchange-related Operations]*. Okinawa Prefecture.

Soritsu 40 shunen kinen-shi *[40th Anniversary Edition Commemorative Magazine]*. Association of Medical Technologists of Okinawa Prefecture.

APPENDIX 4-1 ODA-RELATED INTERNATIONAL COOPERATION

1. Overview

Okinawa has a long history of international exchange, with emigration occurring from the 1890s until after the World War II and the Okinawa's reversion to Japan, and there are currently many people of Okinawan descent living in Southeast Asia, the Pacific, South America, etc. Exchange from the standpoint of international cooperation began in earnest with the opening of the JICA Okinawa International Centre (OIC; capable of housing 110 trainees) in 1985, preceded by the establishment of the International Exchange Section of the Department of General Affairs in the prefectural government in 1979. The history of emigration is an element that characterizes international cooperation in Okinawa Prefecture.

Subtropical climate-based geographical and marine aspects of aid resources have also been utilized in trainee acceptance cooperation, such as coral reef conservation and mangrove ecology management.

Reflecting the distance from Tokyo and population of Okinawa Prefecture, the numbers of experts dispatched and trainees accepted have been small in comparison with national averages. When viewed in terms of the ratio to prefectural population, however, the numbers of trainees accepted and experts dispatched by/from Okinawa Prefecture-related institutions are relatively high.

Primary health care-related activities such as those aimed at improvement of maternal and child health and public hygiene have been of central importance in international cooperation efforts to date, both in terms of the dispatch of experts and the acceptance of trainees, and prefecture-wide involvement has been achieved to an extent not seen elsewhere.

Based on this record of performance, training of experts by JICA in the field of health and medical care has been integrated since fiscal 1999 with training courses conducted by cooperation implementation institutions in Okinawa Prefecture.

2. Achievements in the Dispatch of Experts

The Solomon Islands Primary Health Care Promotion Project (September 1991 - August 1996) can be cited as a case of the dispatch of experts in which Okinawa Prefecture was actively involved. The objective of this project was to improve and strengthen measures aimed at malaria, tuberculosis, health education, and hepatitis B by means of reinforcements at the level of rural health clinics.

The area of nursing education was initiated in August 1993 with the dispatch of a public health nurse from Okinawa Prefecture, and three doctors and public health nurses were dispatched on a long-term basis thereafter. These persons were attached mainly to the prefectural Environment and Health

Department (now the Welfare and Health Department), and other representatives on the country assistance committee included the Okinawa Prefectural Institute of Health and Environment, the Prefectural Naha Hospital, the Koza Health Center, the Okinawa Chubu Hospital, and the University of the Ryukyus Faculty of Medicine. Accordingly, the network of support for experts encompassed the whole of Okinawa Prefecture. Also, in addition to the hospitals cited above, wide-ranging cooperation was received during the parallel acceptance of trainees, including health centers, clinics, and public health stations throughout the prefecture.

The Mexico Family Planning and Maternal and Child Health Project (April 1, 1992 - March 31, 1997) was focused on rural pilot areas in the states of Guerrero and Veracruz, and sought to encourage the participation of local citizens so as to implement improvements in maternal and child health, as well as the training of medical care practitioners and the diffusion of information and educational materials to the local people. The Okinawa Chubu Hospital dispatched long-term experts for this project, and the country assistance committee for expert support was formed in conjunction with the Imperial Gift Foundation Boshi-Aiikukai. A short-term expert was also dispatched from the Prefectural Miyako Hospital, while parallel trainees were accepted by the Okinawa Chubu Hospital, and cooperation was received from health centers, clinics, and public health stations throughout the prefecture. The project was extended by one year through 1998 in order to allow the development and local diffusion of maternal and child health record books.

Faculty of Medicine of the University of the Ryukyus and the International Medical Center of Japan provided long-term experts for the Laos-Japan-WHO Public Health Project (October 1, 1992 - September 30, 1998), and were involved in the Japan-based country assistance committee (for further details, see section 4-2, "University of the Ryukyus Faculty of Medicine, Achievements in International Cooperation").

A recent example is the Bolivia's Project for Regional Public Health Improvement in Santa Cruz (Mini-project; November 1, 1996 - October 31, 1999). This was based on sister city connections, with local government exchange activities developing into ODA. This project involved the dispatch of a project team centered on experts in the field of environmental hygiene and public health, with the former prefectural Environment and Health Department playing a central role.

In addition, assistance and cooperation aimed at emigrants and people of Japanese descent have been conducted through JICA, as well as the acceptance of trainees and the dispatch of experts. Emigrant senior experts were dispatched to the Colonia-Okinawa Clinic in Bolivia from the former prefectural Environment and Health Department (now known as Japanese Society Senior Volunteers, and cooperation continues to be conducted in the area of medical care and hygiene.

3. Achievements in the Acceptance of Trainees

The objective of the acceptance of trainees is the transfer of required technology and knowledge to technicians, researchers, administrators, etc. from developing countries who undergo training in Japan or in specified developing countries. Accordingly, trainee acceptance is positioned as the most fundamental project of JICA's endeavors. In fiscal 1997 JICA accepted a total of over 11,000 trainees from 152 countries (9,586 of these were technical trainees, of whom 7,263 underwent their training in Japan).

Within this total, 264 places had been designated in fiscal 1997 for trainee visitors to Okinawa, while the actual figure was 299. The majority of these trainees, i.e., a total of 183, participated in internal courses (the Information Processing Staff Training Course, the Audiovisual Technology Course, and the Japanese Language Training Course offered by the JICA Okinawa International Centre (OIC).

Other training courses provided in Okinawa Prefecture are centered on those that reflect Okinawa's geographical conditions, including coral reef conservation, effective management of tropical forestry resources, sugar cane cultivation, and mangrove ecosystem management technology. Among these, health and medical care related courses occupy a central position. In fiscal 1997, ten of 24 country specific training projects and four of 14 outside training projects (consigned for outside implementation) were related to health and medical care, and a new Urology Clinical Training Course (University of the Ryukyus' Faculty of Medicine, Department of Urology) was added in fiscal 1998. Over 30% of all outside training in Okinawa are accounted for by trainees in courses related to health and medical care.

A wide range of local governments serve as training acceptance institutions, from the prefecture itself to towns and villages (Okinawa Prefecture Department of Health and Welfare, and municipal governments), as well as public health and medical care-related institutions (Prefectural Naha Hospital, Prefectural Chubu Hospital, and various district Health Centers), public research institutions and associations (Okinawa Sanitation and Environment Research Institute, Okinawa General Health Service Association, Okinawa Public Health Association, and Okinawa Meat Hygiene Inspection Center), and academic institutions such as the University of the Ryukyus Faculty of Medicine. Important contributions to international cooperation are thus being made throughout the prefecture in the area of local and regional health and medical care.

Asian countries have generally dispatched the majority of participating trainees, and these countries continue to account for over 60% of the total number of trainees accepted. However, recent trends show rising numbers of participants from Africa and Eastern Europe.

The training course with the longest history that is currently offered in Okinawa is the Public Health and Environmental Contamination Analysis Technicians' Course. This course is divided into the seven sub-courses of Infectious Disease, Hygienic Animals, Food Chemistry, Air Pollution, Water Contamination, Snake Toxins, and Antitoxins, which are provided by the Okinawa Prefectural Sanitation and Environmental Research Institute. The course was established in 1982, and has been offered a

total of 16 times through 1998. It has been continuously implemented since the Institute was known as the Okinawa Prefectural Institute of Public Health, and has been attended by a total of 86 trainees, mainly from Asia.

Training follow-up surveys have been implemented twice in the past. The first time involved three survey team members dispatched from the Okinawa Prefectural Institute of Health and Environment to Indonesia, Thailand, and the Philippines in 1989, and the second time involved two survey team members dispatched to Tanzania and Egypt in 1997.

Another training course with a similarly long history is the Clinical Nursing Practical Training Course. This course was initiated in 1984, and has been offered a total of 15 times through fiscal 1998. Course content includes internal medicine nursing, emergency and surgery nursing and maternal and child nursing, with the Prefectural Chubu Hospital having served as the accepting institution from the start. Training follow-up surveys have been conducted twice to date, the first time in October 1991 with visits by survey team members to Pakistan, Sri Lanka, and the Philippines, and the second time in July 1997 with visits to Thailand and Nepal. In both instances the survey teams have included of the Nursing Department Head and the Head Nurse from Okinawa Prefectural Chubu Hospital.

Country specific special programs are composed of one for Peru (initiated in 1992) and one for Bolivia/Paraguay (from 1994). Both of these courses have involved prefecture-wide cooperation in the form of acceptance of trainees and the provision of instructors by many health and medical care-related administrative institutions, public and private health and medical care institutions, and academic institutions.

The Urology Clinical Training Course was newly initiated in fiscal 1998, with a total of 13 instructors from the University of the Ryukyu's Faculty of Medicine, Department of Urology, ranging from professors to training physicians. Trainees have come from various locations, including Asia, the Pacific, Eastern Europe, and Central and South America.

Counterpart Trainee Acceptance in FY 1997

Country	Project	Training Categories	Acceptance Period	Main Acceptance Locations
Bolivia	Santa Cruz Regional Public Health	Public Health, Regional Health Administration	2 Weeks	Environment and Health Department, Okinawa Prefecture
Cambodia	Maternal and Child Health Maternal and Child Health	Obstetrics and Gynecology Obstetrics and Gynecology	Just Under 6 Weeks Just Under 6 Weeks	Okinawa Chubu Hospital Okinawa Chubu Hospital
Laos	Public Health Public Health	PHC Parasitology	5 Months 1 Year	University of the Ryukyus Faculty of Medicine University of the Ryukyus Faculty of Medicine
Guatemala	Tropical Disease Research	Tropical Disease Prevention	3 Months	University of the Ryukyus Faculty of Medicine
Mexico	Maternal and Child Health Maternal and Child Health	Maternal and Child Health Maternal and Child Health	2 Months 2 Weeks	Boshi-Aiikukai, Chubu Hospital Boshi-Aiikukai
Panama	Specific/General Specific/General	Local Public Health Systems Local Public Health Systems	3 Weeks 3 Weeks	Environment and Health Department, Okinawa Prefecture Environment and Health Department, Okinawa Prefecture

Training Courses

Training Course	Training Implementation Institution	Initial Fiscal Year and Number of Times Offered	Total Number of Participants	Training Period	Places/Number of Trainees Accepted
Public Health and Environmental Contamination Analysis Technicians	Okinawa Prefectural Institute of Health and Environment	FY1983; 16 Times	86	8 Months	5/5
Clinical Nursing Practical Training	Okinawa Chubu Hospital	FY1984; 15 Times	78	6 Months	5/5
Peru Country Specific Special Infectious Disease Countermeasures	Okinawa Nursing Association	FY1992; 6 Times	72	2 Months	10/13
Bolivia/Paraguay Country Specific Special Regional Health Instructors	Okinawa Nursing Association	FY1994; 4 Times	31	3 Months	10/10
Urology Clinical Training Course	University of the Ryukus Faculty of Medicine, Urology Department	FY1998; 1 Time	6	20 Days	5/6

Figures for country specific special programs are through fiscal 1997. Others are through fiscal 1998.

Group Participation Courses

Group Participation Course	Project	Training Category	Acceptance Period
Audio Visual Media Production (A)	Turkey Population Education Promotion	Audio Visual Technology	3 Months
	Turkey Population Education Promotion	Audio Visual Media Production	3 Months
Video Production	Tunisia Population Education Promotion	Video Production	4 Months
Audio Visual Media Production (B)	Philippines AIDS Countermeasures	IEC	4 Months
	Philippines Family Planning and Maternal and Child Health	IEC	3.5 Months
	Tunisia Population Education Promotion		3.5 Months

5. Conclusion

5-1 Preconditions for Formulating the Proposal

It took almost 27 years from the end of the Second World War in 1945 to the full application of the Japanese Constitution to Okinawa through its reversion to Japan on May 15, 1972. After its complete devastation in the war, the provision of food and relief for the sick and injured were carried out under the U.S. Occupation, and measures such as the eradication of disease-carrying insects were rapidly implemented.

In 1951, health centers were set up, a system of resident public hygiene nurses (currently known as public health nurses) was established, and food hygiene and environmental health operations were commenced. Based on the health centers, immunization, nutrition improvement projects, maternal and child health programs, tuberculosis and venereal disease countermeasures, food and environmental health measures, and disease-carrying rodent and insect countermeasures were implemented

After Okinawa was made a permanent U.S. base, indirect subsidies from the Japanese government were provided via private-sector organizations, etc. and various laws were promulgated based on the systems of the mainland Japan. The autonomy of the government of the Ryukyus was only recognized within the scope permitted by the U.S. Military Government.

Dependent on income from the bases, the U.S. military budget, and subsidies from the Japanese government, the finances of the government of the Ryukyus were fragile. However, in spite of very limited human resources and the economic hardships of everyday life, activities for the protection of Okinawans' lives and health were continued. Acute infectious diseases such as dysentery were eradicated, measures against tuberculosis were taken, and Okinawa's success in reducing the chemotherapy period in tuberculosis treatment received national attention in Japan. Moreover, with assistance from the U.S. Army, WHO, and Japanese experts, the eradication of malaria and filaria after the war were achieved through the participation of Okinawans at health centers and other local authorities.

The public hygiene nurses appointed by the government of the Ryukyus were stationed at cities, towns, and villages, where they were not only solely responsible for public health administration, but also implemented various other health-related projects in close cooperation with local authorities and schools. With respect to measures against tuberculosis, they took care of everything from locating patients to treatment, administration, and social rehabilitation. Project planning and coordination of various activities for public hygiene nurses were conducted by the nursing sections of the health centers.

In addition, the steady efforts of medical servicemen, public hygiene supervisors, food hygiene supervisors, medical technologists, and venereal disease prevention officers have all contributed to the creation of present-day Okinawa Prefecture, which is well-known for the longevity of its residents.

This chapter examines ways of making use of the experience of Okinawa Prefecture in Japan's international cooperation. Proposals for international cooperation by the members of the study committee

which conducted this study have been included at the end of the chapter.

The future possibilities for international cooperation in Okinawa in the health and medical care sector are analyzed in the Concept for International Medical Cooperation in Okinawa (see Concept 4 at the end of this chapter) drawn up by Okinawa Prefecture. Based on the current situation in Okinawa, the study committee formulated the following five preconditions for its investigation of future possibilities.

(1) Okinawa's post war experience will be utilized.
(2) Manpower, facilities and equipment will mainly be provided from within the prefecture.
(3) Cooperation will be based on primary care and primary health care.
(4) Participation of younger generations to ensure the accumulation of experience within the prefecture.
(5) Continuing guidance and feedback can be provided.

5-2 Okinawa's Distinctive Features and Potential Fields from the Perspective of International Health and Medical Care Cooperation

5-2-1 Okinawa's Distinctive Features

As mentioned in Chapters 2 and 3, the distinctive features of Okinawa with regard to international cooperation in the field of health and medical care can be summarized as follows.

* An island region consisting of 57 large and small islands extending 1,000 km from East to West and 400 km from North to South.
* A subtropical climate and epidemiological environment similar to that of tropical developing countries.
* A historical, social, and cultural background open to the outside world, mainly to the Asian and Pacific regions.
* Through the process of administration and rehabilitation by the U.S. military with the devastation after the war, the development of regional health and medical care making optimal use of limited manpower and facilities.

As explained in Chapter 4, Okinawa has taken an active part in development assistance in the health and medical care field on the basis of these distinctive features, thereby accumulating the following assistance resources.

* The prefectural health and welfare department and related public health administration organizations; Cooperation in regional public health projects in Northern Sumatra in Indonesia and in the Solomon

Islands

* Chubu Hospital, Naha Hospital and related prefectural medical institutions;
  Participation in a public health project in Santa Cruz, Bolivia and the Kolonia-Okinawa medical office cooperation project
  Cooperation in a family planning/maternal and child health project in Mexico
* University of the Ryukyus Faculty of Medicine;
  Cooperation in a public health project in Laos
* Private-sector organizations such as nursing associations and associations of medical technologists, NGOs such as Cambodia-Okinawa Friendship Association and the Okinawa branch of Médecins Sans Frontières (MSF: Doctors Without Borders), and emigration-related organizations such as the Okinawa-Bolivia Association
* Municipalities and citizens' organizations;
  Provision of training opportunities by accepting trainees and through various exchange activities

5-2-2 Potential Fields for Cooperation

In view of the above-mentioned distinctive features and assistance resources, consideration may be given to the following types of Okinawa-based assistance projects.

* Improvement of regional public health and medical care systems
* Enhancement of medical services for remote areas and remote medical system
* Projects for improving regional public health based on PHC (including reproductive health)
* Education and training programs for medical staff
* Measures against infectious diseases

In the next section, consideration will be given to the kinds of specific assistance projects that can be conducted in these fields.

5-2-3 Specific Fields for Cooperation

(1) Projects for Improving Regional Public Health and Medical Care Systems at the Provincial Level

In recent years, comprehensive organizational reforms of the public health sector aimed at improving the efficiency of health and medical care services has become an important task in developing countries. The priorities of public health sector reforms being promoted mainly by the World Bank and other organizations are the decentralization of health and medical care administration, the introduction of fee payment for medical services, and the improvement of quality. Because of its geographical separation

from Japan's main islands and the nature of the US military occupation in the post-war years, Okinawa has pursued a relatively independent path in its implementation of every aspect of public health systems, from the fostering of health and medical staff to the development of medical services and establishment of an administrative system. Based on this experience, it should be possible for Okinawa to provide assistance in the administrative field with regard to health/medical care and public hygiene administration systems and the establishment of regional medical service systems. However, considering that foreign language ability is important for assistance in the administrative field and that the system of each country has its own distinctive characteristics, it will be essential to foster human resources capable of dealing with the various administrative systems in developing countries. It is also important to systematically draw up materials that can be used to convey Okinawa's administrative experience. In this respect, materials relating to the remote medical system currently being developed in Okinawa as part of regional referral system technology transfer process will be particularly useful.

(2) PHC-Oriented Regional Public Health Projects with Residents' Participation

In post-war Okinawa, regional public health activities, particularly in the isolated islands and remote regions, have been effectively conducted making the most of limited resources. From the initial resident public hygiene nurse system to the current municipal public health nurse system, this success has been due to the close regional ties of nurses and local authorities and strong solidarity among residents. The traditional public health management methods that Okinawans themselves have learned to operate, the environmental improvement and health education activities, and the activities of public health nurses coordinating the health management of local residents as a whole can provide many useful lessons for developing countries striving to establish systems to promote regional health and health improvement with very limited social resources. Training programs for public health nurses from developing countries in local towns and villages, particularly for long-term training in the isolated islands, would be an effective way of giving them an overall image of a regional public health system. In addition, exchange between trainees and residents would provide trainees with useful hints concerning participatory public health measures, as well as giving local residents opportunities for cultural exchange.

In implementing these programs, it will be necessary to formulate measures to support the public health nurses who will be conducting training as counterparts of the trainee nurses, including the provision of sufficient advance information, foreign language training, and the reduction of their work burden.

(3) Education and Training Programs for Medical Care Workers

The main medical training institutions in Okinawa are the Ryukyu University Faculty of Medicine, which provides education and training for doctors, Chubu Hospital, which trains doctors specifically for work in the isolated islands and remote regions, and the recently-established Okinawa Prefectural College of Nursing, which offers a four-year degree course in nursing. Since the teaching staff and leaders at all of these institutions have experience in international cooperation, they can provide support

that fully meets the requirements of developing countries.

(4) Measures against Infectious Diseases

In addition to the malaria and filaria arising from its subtropical climate, Okinawa has succeeded in eradicating or controlling many other infectious diseases. As a result, the prefecture and local authorities have accumulated considerable know-how concerning the field of disease control. Furthermore, University of the Ryukyus Faculty of Medicine has been conducting research on infectious diseases from the viewpoint of genetic biology. If this know-how were integrated to support systematic infectious disease prevention measures in developing countries, it would have a significant effect. Comprehensive infectious disease countermeasures incorporating public hygiene activities involving residents, administrative measures, and the results of epidemiological, pathological and genetic engineering research have been urgent tasks in developing countries.

5-3 Toward the Expansion of Health and Medical Care Assistance Projects in Okinawa

(1) Regional Promotion through Development Assistance Activities

It is necessary to look into the promotion and expansion of health and medical care assistance projects in Okinawa on the basis of a clear understanding of the purpose of Okinawa's participation in development assistance. If we focus only on Okinawa's suitability and simply make use of Okinawa for development assistance, projects are likely to be cut back sooner or later. A clear indication of the merits and incentives for Okinawa's participation can be expected to lead to the more active utilization of Okinawa's development assistance resources.

To this end, participation in development assistance should be promoted in such a way that it also provides benefits for Okinawa through regional vitalization, economic growth, and human resources development. In addition, investment must be planned to take root in Okinawa in the long term, including the aspect of human resources development, in contrast to limited, short-term investment in public works projects and the like.

(2) Establishing Bases for Information, Research, and Training concerning International Public Health

Although Okinawa has gained very useful experience through receiving development assistance in the field of health and medical care, this study confirmed that, because this experience has not been systematically organized, there is a danger that it will fade or be lost in the future. It is therefore important to meticulously compile records of this experience, conduct an analysis based on the current situation and development assistance trends in developing countries, and formulate new development assistance methods.

Having established bases for information collection, research, and training on international public

health, particularly primary health care and regional medical services, at the University of the Ryukyus Faculty Medicine, the new Okinawa Prefectural College of Nursing, and Chubu Hospital, it is now hoped that Okinawa's experience will be systematized, information on current health and medical care development assistance projects all over the world will be collected and analyzed, and research on new development methods will be systematically conducted at these institutions. As a result, researchers, students, and those involved in development assistance not only from Japan but also from overseas will gather in Okinawa, which will in turn enhance Okinawa's cultural and intellectual status in the eyes of the international community.

(3) Countermeasures against Infectious Diseases supported by Enhanced Research Functions

Because of Okinawa's geographical position, its unique experience in fighting infectious diseases has been closer to the problems actually faced in tropical regions than that of Japan's main islands. As stated in section (2) above, through more systematic analysis and organization, this experience and knowledge could be put to highly effective use in the development of future global measures against infectious diseases.

With the increasing menace of infectious diseases entering Japan from overseas in recent years, the identification of overseas trends of infectious diseases through development assistance in Okinawa and research into methods of combatting them will play an important role in building an epidemiological breakwater against infectious diseases in Japan.

(4) Using Okinawa as a Venue for Health and Medical Service Development Assistance

As shown by the G8 Summit Meeting held in Okinawa in 2000, the international character of Okinawa makes it an excellent venue for all kinds of international conferences. In terms of disseminating overseas the knowledge it has accumulated concerning international public health and global infectious disease problems, the holding of international conferences on health and medical service development assistance in Okinawa can be expected to enhance Okinawa's position in the international community and promote various kinds of cultural and economic exchange.

(5) Support for NGOs in Okinawa and Citizens' Participation in International Cooperation

Through their experience of the Second World War and American sovereignty, as well as their active history of emigration, the people of Okinawa have an exceptionally strong international awareness. This is also reflected in the cordial reception they give to trainees from overseas and their positive approach to overseas volunteer activities. It is important to actively support this international awareness of residents so that it leads to the expansion of specific international cooperation projects. To this end, it will be vital to promote the further expansion of regional activities such as those conducted by the JICA Okinawa International Centre.

5-4 Conclusion: Learning from Okinawa's Experience

This study reconfirmed that the systemization of Okinawa's development experience in the regional public health and medical care field and its utilization for assistance in developing countries would be highly effective. However, when considering the future role Okinawa should play in development assistance, the meaning that this participation will have for Okinawa itself should always be born in mind.

The most valuable lesson learned from this study was that development assistance in Okinawa was founded on the experience of regional health care through the self-sacrificing activities of public hygiene nurses and medical servicemen together with the active participation of local residents, supported by the devoted activities of medical staff who contributed to regional medical care in remote areas even at the risk of their own lives. If we can convey the spirit of those involved in this work, this will give these studies sufficient meaning. Amid the growing tendency to describe development assistance only in terms of money and materials, we came to the strong realization that the key to successful development assistance is to focus once more on the "common spirit" that underlies development assistance.

Proposal 1: Training in Clinical Techniques

Kaoru Ashimine
Deputy Director, Okinawa Chubu Hospital

Having already outlined the international medical cooperation conducted up to now by the Okinawa Chubu Hospital, I will consider here, based on the medical assistance Okinawa has provided, what other kinds of cooperation can be undertaken by making use of the currently available manpower.

1. Doctor Training: Clinical Training Program for Doctors from Overseas

Since 1967, the Okinawa Chubu Hospital has provided postgraduate clinical training programs for about 60 trainee doctors every year. There are also plans to provide a similar program for trainee doctors from overseas, giving the highest priority to residents of Asian countries. For the time being, the most practical course would be to accept only the number of trainees (two or three) that the current staff can cope with. The following is a rough outline of the training program.

Training period: 3 months

* Surgical training - general surgery (2 months), emergency surgery (1 month)
* Internal medicine - general internal medicine or pediatrics (2 months), emergency treatment (1 month)

Training content

* Observation of doctor's round of visits, participation in case study meetings, acquisition of patient examination techniques

To develop this training program, we should increase the number of trainees in the future. For this purpose, specialist teaching staff will be necessary. In addition, the following measures will have to be taken.

a) The permanent employment at Chubu Hospital of one administrative staff who will be responsible for looking after and managing trainee doctors from overseas.
b) The establishment in Chubu Hospital of an office for the use of trainee doctors from overseas.
c) The establishment of a standby room in the hospital and accommodation facilities for trainees.
d) Appointment of doctors at Chubu Hospital to the post of overseas trainee doctor instructor.

If training is provided for clinical education instructors from Asian countries, a period of 1-2 months for the main classes in each field would be desirable.

2. Natural Disaster Relief and Outlying Island Medical Service Training Program

This program would provide training concerning the support provided for medical services in the outlying islands of Okinawa. A one-month training program will be made available for 1-2 persons who perform emergency medical work. The training will include observation at Chubu Hospital's emergency center and at clinics on outlying islands and studying the administration of the outlying island medical service support system and patient transportation system.

3. Infectious Disease Countermeasures Training Program

This two-week program would provide training for staff or instructors from regional hospitals. The training will include the Gram method, the acid-fast bacterium stain technique examination using a microscope, and methods of selecting and using antibiotics. In addition, discussion will be held with doctors in the hospital's infectious disease group.

Proposal 2: Primary Health Care Training at Health Centers, Municipalities, Nursing Associations, and the College of Nursing

Sachiko Nakazato
Professor, Okinawa Prefectural College of Nursing

It is now over 20 years since the declaration on primary health care (PHC) at the WHO/UNICEF International Health Conference held in Alma-Ata in 1978. The Alma-Ata Declaration stated that "Health is a basic human need concerning which there should be no difference between people for political, social or economic reasons." Based on this principle, PHC activities were launched all over the world with the aim of realizing the ideal of "health for all human beings by the year 2000."

The activities of the public hygiene nurses in Okinawa, which started from virtually nothing after the Second World War, are in accord with this principle of primary health care. By looking back on these activities from the perspective of the present and evaluating their significance, we can provide practical training based on the PHC ideal. The study of the current situation and history of Okinawa's regional public health activities would likely prove very helpful for trainees in their implementation of similar regional health projects in their own countries.

1. Training Content

The following training content may be considered.

(1) Changes in public hygiene activities in Okinawa
(2) Overview of public health, medical care, and nursing administration
(3) Overview of nurse education (nurses, public health nurses, and midwives)
(4) The public health nurse system in Okinawa
(5) Fundamentals of regional public health nurse activities
(6) Organization and operations of health centers and the role of public health nurses
(7) Organization and functions of local authorities and the role of public health nurses
(8) Collection and use of public health statistics
(9) Causes of illness and preventive measures
(10) Regional public health measures
(11) Activities of regional public health nurses
(12) On-site education of public health nurses
(13) Activities of related organizations
(14) Specific required by trainees

The training methods should consist of both lectures based on Okinawa's public health experience and practical training in the field. Since it is necessary to repeat methods successfully adopted in the past, the accumulation of past data is also important. And, since the trainees dispatched from overseas will be participating as leaders in this field in their country or region, it will be necessary to pay careful attention to differences in culture and customs so that trainees can effectively apply what they have learned after they return.

2. System for Implementation

Making full use of their achievements and respective functions, health centers, local authorities, Okinawa Prefectural College of Nursing and the Okinawa Nurses' Association can implement training programs. To ensure smooth operation, a system for cooperation among these organizations should be established and a central coordinating organization and training committee should be set up.

3. Assessment

It will be necessary to regularly scrutinize training programs while assessing the effect of the know-how and techniques trainees have learned upon primary health care activities in their countries after their return. These assessments should be carried out as part of the overall program of the organizations responsible for implementing training.

Proposal 3: The Future of International Health and Medical Care Cooperation by NGOs in Okinawa

Chokei Yoshida
Chairperson, Cambodia-Okinawa Friendship Association

If we think carefully about each of the four keywords in this title - “Okinawa,” “NGOs,” “international health and medical care cooperation,” and “the future” - a rough image emerges.

First of all, the distinctive characteristics of Okinawa are its location in the subtropical zone and the Ryukyu culture that has developed through trade and exchange with Korea, China, and Southeast Asia since ancient times. Through this history, most Okinawans have inherited a pleasant nature and practical sense springing from direct exchange with each other, without much consciousness of the “upper currents” of nationality, national law or borders.

Furthermore, the emigrants who went abroad (in light of the problem of a growing population that the land was not productive enough to support) quickly put down roots in their adopted countries and became highly productive citizens. This experience has also helped form (the characteristically independent-mindedness) toughness, and diligence of the Okinawans. Yet the most distinctive features of Okinawa were the fierce three-month land battle that left it completely devastated 50 years ago and the unwavering persistence that the Okinawans have shown in their tremendous efforts to achieve complete recovery over the past half century.

After the war, when many Okinawans did not even have the basic necessities of life, the administrative structure was of course very weak. However, by marshaling the remainder of human resources that had been fostered before the war, combined with the returnees from overseas, the recovery of the administration was probably more rapid than could be achieved in today’s developing countries. And even before that, many private organizations were formed to undertake or assist with projects that the administration should have carried out but could not implement on its own. It was these capable volunteer organizations (now known as NGOs) that took the lead in tackling difficult problems that the administration could not deal with alone, such as tuberculosis, Hansen’s disease, mental illness, and parasitic infections. The efforts of the local administrative officials who cooperated positively and flexibly with these projects should not be forgotten.

This was the beginning of the Okinawa-style NGOs. As a result of their activities, there are now many foundations in Okinawa that have close links with the Okinawan administration. In addition to these foundations, more than 50 NGOs have been established and are pursuing their own independent projects. This reflects the considerable influence of NGOs on Okinawa’s post-war recovery, but we also cannot overlook the measures, particularly the master plan for human resources development, taken by the U.S. government based on humanitarian principles (part of which was Occupation policy).

The training and regionwide use of clinical examiners and public hygiene nurses (now public health nurses), which began immediately after the war, provides the greatest hint when considering what form Okinawa’s international health and medical care cooperation should take. The people of Okinawa are currently the longest-lived in Japan, and therefore the world. Of all the factors contributing to this, the system of local residence of public hygiene nurses has had an immeasurable influence.

At present, various health and medical care cooperation projects are being conducted in developing countries. The first proposal that can be made based on Okinawa’s experience of over half a century is the training of large

numbers of public hygiene/health nurses to serve as medical staff capable of covering all the areas where people live. It is also important to have doctors based at the "nodes" of this network in order to work in coordination with nurses, but if these are doctors who only provide clinical services at these key points they would no doubt appear naturally in accordance with economic principles, without any need for government intervention. For this reason, the large-scale employment of public hygiene/health nurses should be given the highest priority in terms of government policy. If possible, it would be best to foster public health-minded doctors together with these public hygiene/health nurses.

Okinawa is currently conducting an assistance project to promote regional health in Bolivia and is also providing health and medical care assistance to various other countries by accepting trainees through the JICA Okinawa International Centre. Nevertheless, regarding the utilization of human resources and know-how in the private sector, appeals to the public and other such cooperation measures (such as a system for taking annual paid holidays to do volunteer work) are inadequate, and grassroots activities are thin on the ground.

Leaving advanced studies and research to other regions, Okinawa has succeeded in fostering human resources in the applied science of health and medical care, particularly the practical techniques of public health and hygiene, that are second to none in terms of both quantity and quality. In this, the University of the Ryukyus Faculty of Medicine has played a key role in coordinating the various fields.

In recent years, Japan has been reviewing its approach to international cooperation (ODA, etc.) at the government level. It has turned its attention to the activities of international NGOs, which may be viewed as a manifestation of the energy of the private sector, and is making efforts to promote and utilize them. However, although grant aid for grassroots projects has been increased and there is a general feeling that we have now entered age of the NGO, progress cannot be made simply by increasing funds.

First of all, we need a change in the basic attitudes of society so that NGOs, i.e., various non-government, non-profit volunteer activities, naturally spring up, become the purpose of people's lives, and take root at the core of our values. Nothing substantial can be achieved if the well-coordinated activities of certain prominent groups continue to be treated as a rare social phenomenon and remain as "international volunteer activities" vaunted in the media.

Next, once the fragile buds of this spirit of public service have appeared, we must ensure that they do not wither and die. Social scientific promotion facilities and systems must be established so that these movements can gain strength by becoming groups and then organizations. In the United States, for example, there are even NPOs whose purpose is to support NPOs. The role of nurturing fragile young NPOs should be augmented by the government, prefectures, and local authorities, as well as by religious organizations and the business world.

The system of taking time off to do volunteer work is under consideration but has not yet been developed.

Whether they are civil servants or company employees, people have value as members of society apart from their capabilities and their time spent at work. What we now need most of all is for the government and corporations to guarantee a sufficient margin of time (money) for people when they want to provide their value or abilities as human beings to meet the requirements of society at home or overseas. Rooted in the local spirit of brotherhood and solidarity, NGO activities will no doubt expand in various directions. Drawing upon the experience of its long history of international exchange, Okinawa will continue to function as a vital base in the field of international health and medical care cooperation. The scale of local people's volunteer activities is still small, but if government subsidies are provided and an appropriate legal framework is put in place, grassroots volunteer movements can wield extraordinary power and have exceptional impact. It is vital that the government and corporations step back and obtain a wider perspective on NGOs.

Proposal 4: The Okinawa International Medical Cooperation Plan

Masako Kinjo
Deputy Director General,
Department of Health and Welfare Okinawa Prefecture

1. Aim and Background of the Plan

In the Third Okinawa Promotion Development Plan, the Japanese government stated that the basic orientation of the plan was the establishment of a Southern base for international exchange, making full use of Okinawa's regional characteristics. In response to this, Okinawa adopted the concept of "Cosmopolitan City Formation" based on the principles of mutualism, peace, and independence. According to this concept, by promoting diverse international exchange and cooperation utilizing Okinawa's geographical and cultural characteristics and its historical experience, the prefecture would aim to promote self-supportive development and contribute to the peace and sustainable development of the Asia-Pacific region. This is in accordance with the role of Okinawa as the "Pacific crossroads" in Japan's "Grand Design for the 21st Century."

The Okinawa International Medical Cooperation Plan was proposed as a concrete policy for realizing this ideal in the field of health and medical care, following an investigation into cooperation projects that could respond to the needs of countries in the Asia-Pacific region by making use of Okinawa's unique characteristics. In response to this proposal, a budget was allocated in 1997 within the Okinawa special development measures expenses, and the Study Committee on Okinawa's International Medical Cooperation was established by the Ministry of Health and Welfare (entrusted to Japan International Cooperation of Welfare Services). In order to investigate what kind of international medical cooperation Okinawa could undertake and its possibilities and orientation, the Committee conducted studies of medical needs in eight developing countries in the Asia-Pacific region. Based on these studies, proposals were made concerning the orientation of international cooperation fields such as primary health care, emergency medical services, measures against infectious diseases, and public health and hygiene.

In 1998, the Committee was divided into two working groups to conduct overseas studies and look into training systems. In addition to carrying out detailed local studies in Vietnam, Fiji, and Bangladesh, the Committee investigated the specific content of medical cooperation, the organizations in charge of implementation, and administrative procedures.

2. Basic Prerequisites for Formulation of the Plan

(1) Historical and geographical background

The health and medical care situation in Okinawa from the end of the Second World War to the present is similar in many ways to the various circumstances in the countries of the Asia-Pacific region, including limited medical facilities and human resources, the spread of malaria and filaria, a high infant mortality rate, and poor public hygiene. Okinawa has accumulated considerable know-how in the course of overcoming these problems, and, since many of the doctors and medical staff who were involved are still active, their experience can be quite helpful in promoting the improvement of public health and medical services in the Asia-Pacific region. From the 14th to the 19th century, the Kingdom of the Ryukyus enjoyed trade with many countries in the region, whose influence is reflected in the diversity of Okinawan culture. Since Okinawa is a subtropical region with a similar climate, food culture, and traditions to other countries in the Asia-Pacific region, it also provides an environment in which trainees from these countries feel more relaxed and comfortable.

(2) Accumulation of clinical training know-how

Through the clinical training system for physicians that has been run over the past 30 years in cooperation with the University of Hawaii, the Okinawa Chubu Hospital has accumulated substantial know-how that could easily be put to use. Rather than relying on expensive diagnostic equipment, this clinical training system is based on bedside instruction through which the trainees learn primary health care techniques including emergency treatment. About 600 doctors have been trained under this highly-acclaimed system.

(3) Clinical training for doctors from overseas

Since receiving approval from the Ministry of Health and Welfare as a training facility for doctors from overseas, the Okinawa Chubu Hospital has achieved significant results in this field. In addition to the eight authorized clinical trainers, 16 persons are qualified to receive this certification upon application.

(4) Similarities in health and medical care environments

Okinawa Prefecture consists of many isolated islands scattered over an extensive maritime region. Since the prefecture administers a health and medical care personnel system for training doctors and others involved in medical assistance on isolated islands, a patient transportation system, and a remote medical information system, it can provide this know-how to countries in the Asia-Pacific region that also contain many outlying islands and remote areas.

(5) Cooperation with JICA

The JICA Okinawa International Centre accepts trainees from developing countries, conducting human resources development projects in various fields. In coordination with these activities, Okinawa Prefecture has provided training for doctors, public health nurses, nurses, medical and public health technologists, and public health administrators.

3. Health and Medical Care Needs in the Asia-Pacific Region

The health and medical care situation in the Asia-Pacific region varies from country to country, and even within countries there are considerable disparities between urban and rural areas. Generally speaking, however, people's nutritional condition is poor, the death rates for expectant mothers, infant mortality, parasite infection rates, and infectious disease contraction rates are high, trained medical staff are insufficient, and medical facilities are inadequate. WHO's Alma-Ata Declaration stated that the main health and medical requirements of developing countries in the Asia-Pacific countries lay in the area of primary health care, and this was confirmed by the results of needs studies in 11 countries in the region. In addition, strong interest has been shown in training in fields such as primary care, emergency medical care, medical care in isolated islands and remote areas, and perinatal maternal and child care.

As an overall approach to the international medical cooperation required by the various aid recipient countries, we need to promote reciprocal exchange through the acceptance and development of human resources from overseas, the dispatch of experts, and the establishment of remote medical information networks in accordance with the specific needs of each country.

4. Outline of the Plan

(1) Development of Human Resources for Health and Medical Care

As well as accepting doctors, etc. as trainees from countries in the Asia-Pacific region according to their needs, training will also be provided for Japanese doctors who can contribute to international medical cooperation.

1) Training content

Training courses and curricula that can meet the needs of countries in the Asia-Pacific region will be developed. The training curriculum, based on the primary care and emergency treatment conducted at Chubu Hospital, will be developed into a human resources development program aimed at dispatch overseas through the addition of a foreign language training course and courses on maternal and child health care, remote medical system, measures against infectious diseases, etc.

2) Training program and period

Applications will be invited from Japanese doctors who wish to undergo training. In the first two years of the three-year training program, trainees acquire primary care education to the required level. The third year is devoted to practical training on one of the outlying islands of Okinawa Prefecture.

3) Employment of trainers

As well as developing the required training staff in Okinawa Prefecture, applications will be invited from throughout Japan and overseas.

(2) Development of remote medical system

Trainees will study the development and administration of public health and medical care services adapted to the Okinawa's geographical features through the introduction of remote medical system which have been developed using the multimedia telecommunications technologies that have advanced so rapidly in recent years.

5. Promotion of the Plan

Bases will be set up at prefectural hospitals for the promotion of international medical cooperation with countries in the Asia-Pacific region. To this end, it will be necessary to develop facilities in order for these hospitals to be designated as clinical training hospitals for doctors from overseas. Clinical training programs will be prepared and training provided at medical facilities such as Okinawa Chubu Hospital and Naha Hospital. In devising and implementing these programs, full use will be made of the know-how and proposals of organizations such as the Okinawa Medical Association and Nursing Association.

Proposals for Training Courses Implemented in Okinawa

The Committee has proposed the following as examples of training programs in the medical cooperation field that can make use of Okinawa's advantages and regional characteristics.

(1) Clinical technique training

* Utilization of the clinical training system at Chubu Hospital – Clinical training techniques for local requirements
* Training courses for instructors for postgraduate clinical studies
* Courses on the use of appropriate pharmaceuticals

(2) Emergency/disaster medical treatment

* Training of trainers (TOT) in basic emergency treatment techniques
* Seminar on post-disaster medical measures in island countries

(3) Public health and hygiene/PHC

* Provision of reference materials concerning Okinawa Prefecture's past projects and present implementation system
* Technical training on health and welfare statistical information processing
* Technical training for PHC management (formulation of action plans, evaluation criteria, etc.)

(4) Public health and medical care in island countries

* Seminar on public health and medical problems in island countries

(5) Integrated medical training for nurses, public health nurses, medical technologists, and other comedicals

* Training of trainees (TOT) in basic clinical examination techniques
* Training in examination techniques, detailed management and maintenance relating to basic examinations needed to diagnose major illnesses, particularly in developing countries - infectious disease-related tests, HIV tests, blood transfusion tests, and biochemical tests.
* Preparation of media materials for the dissemination of public health education

Assuming the implementation of the above-mentioned plan, it will be necessary to develop a system for the acceptance of trainees within the prefectural government and related organizations, including the development and allocation of human resources for training people from developing countries and the establishment of the necessary administrative functions.

Proposal 5: Development of Human Resources for International Cooperation in the Health and Medical Care Sector in Okinawa

Akira Hashizume
Director, First Medical Cooperation Division,
Medical Cooperation Department, JICA

In response to the ongoing globalization of society, many universities, faculties, and courses prefixed with the word “international” have sprung up in recent years, and systems for the development of human resources for international cooperation are being established all over Japan. However, it cannot be said that there are sufficient instructors at these universities who can instruct younger generations in know-how concerning international cooperation in the field of health and medical care, or that these institutions have the facilities to provide appropriate practical training in this area.

The cooperation developing countries require from Japan in the field of health and medical care, apart from the transfer of high-level medical technology (which brings them under financial pressure), is access to the keys of Japan’s extraordinary success in improving its health and medical care standards after the war. The instructors who can teach this know-how to younger generations are, to a surprising extent, the people who actually implemented these improvements. The places where practical training can be carried out have not changed, and the persons or organizations responsible (base facilities and their staff, citizens’ organizations, etc.) remain essentially the same.

Unfortunately, in regions other than Okinawa, the period of conspicuous improvement in public health and medical care standards was from around 1945 to 1960. Most of the key people who could talk about these projects have now reached the age of average life expectancy in Japan and many of them are no longer with us. Since most of the base medical facilities have been rebuilt in the context of regional modernization, it would be very difficult to find facilities or local environments that remain as they were when the improvements were made.

In Okinawa, on the other hand, the post war improvement of public health and medical care standards proceeded at a relatively slow pace, and the conspicuous improvements made at the time of Okinawa’s rehabilitation are still visible. Many of the people who implemented these improvements are still alive and, amid Okinawa’s rich natural environment, the facilities and the local environment remain much the same.

Okinawa thus has the conditions required for international cooperation and an ideal location for the training of young people from all over Japan for this purpose. There are high expectations that training programs will be established in Okinawa not only for JICA-related personnel but also for trainees from Japanese universities and NGOs.

Of course, since the situation in Okinawa will come to resemble that of other prefectures in a decade or so, it will be difficult to convey these experiences to the younger generation if we miss this opportunity to set up training programs. We must strive to avoid a situation where it is a matter of course for development assistance to be undertaken by those without direct experience, for it is these people upon whom Japan’s reputation will depend in overseas countries.

APPENDIX: THE PUBLIC HEALTH NURSE MANUAL

Hisako Fukumori
Public Health Instructor, Health Promotion Division,
Department of Health and Welfare, Okinawa Prefecture

Fumiko Higa
Chief, Health and Welfare Section,
Ishikawa Health Center, Okinawa Prefecture

After the Second World War, public health nurses were trained and posted in all parts of Okinawa, including outlying islands and remote areas, and public health operations have been conducted throughout the prefecture.

Through these activities, the public health nurses have constantly striven under difficult conditions to find ways of effectively addressing the public health of local residents. During the 45 years from 1951 to 1997, the Public Health Nurse Manual was used as guidelines for the provision of universal public health services for local citizens through the activities of resident public health nurses, and it still forms the basis of these activities. It is also used as a manual for nursing trainees from overseas and public health nurses in other countries. Here we have attempted to put together a Public Health Nurse Manual for countries or regions where public health nurse training and activities are not yet being conducted so that local people can undertake public health management on the basis of the long experience of public health nursing activities in Okinawa in the post war period.

1. Assessing the Status of Public Health Nursing Activities in the Region

(1) Determination of the situation in the region where the nurse is assigned (data collection)

1) Natural Environment
   * Location and area, geographical features, climate, etc.
2) Regional Field Studies and Preparation of Maps
   * Location of communities, roads, transportation facilities, schools, public offices, hospitals, clinics, stores, water supply, assembly halls, etc.
3) Public Health Statistics
   * Population: By sex, age, occupation, and community unit
   * Population movements: Births, babies with low body weight, infant and child mortality, overall mortality, etc.
   * Situation of pregnancy notification, immunization, etc.

4) Living Environment: Water Supply, Sewerage, Toilet Conditions

5) Status of Industry and Economy

* Industry: Primary, secondary, and tertiary industries
* Economy: Income maintenance of livelihood, welfare

6) Transportation and Communications

Buses, railroads, airways, and shipping

7) Education

* Number of nursery schools, elementary schools, junior high schools, high schools and universities, and number of pupils/students

8) Social Resources

* Educational facilities: Facilities to be listed under headings of ordinary education and special education
* Social welfare facilities: Outline of the social welfare facility situation
* Regional organizations: Names of organizations most closely involved in regional activities
* Medical facilities: Situation of medical facilities in the region
* Persons involved: Persons most closely involved in administration

9) Administrative and Financial Situation

* Status of revenue and autonomous revenue sources, e.g., local taxes, and taxes allocated to local governments.
* Social security system

10) Public Health Issues

* Status of disease occurrence, pregnancy notification, immunization, results of health inspections, etc.
* Level of awareness of public health

Method of Determining the Disease Occurrence Situation

Age of persons examined, addresses, symptoms, treatment, oral diagnosis, examination, instructions, records, patient's record books, local field studies, patient distribution charts, data collection, and data totalization.

(2) Formulation of Public Health Nurse Action Plan

When drawing up an action plan, it is essential to consider ways of proceeding according to the needs of the region and its inhabitants. Priority considerations include how to promote activities effectively, how to make patients, families and local residents aware of their health and encourage them to lead healthy lives, and how to solve the various problems that influence people's health. In addition, in the current situation where public health and hygiene activities are being expanded in response

to changes in social circumstances and the nature of diseases, nurses tend to be so busy dealing with their immediate duties that excessive demands and inconsistencies may arise. The determination of objectives and targets is therefore the key to sound and effective performance, while it is also important to formulate the plan carefully to ensure that these objectives and targets can actually be achieved.

1) Planning Period

Coordinating the schedules of the persons involved, the plan will be drawn up with the aim of implementation in the following year.

2) Submission of Completed Plan

To be approved by the Nursing Section or Director of the Public Health Center

3) Procedure for Drawing Up Plan

a) Collection of Information - analysis - identification of problems

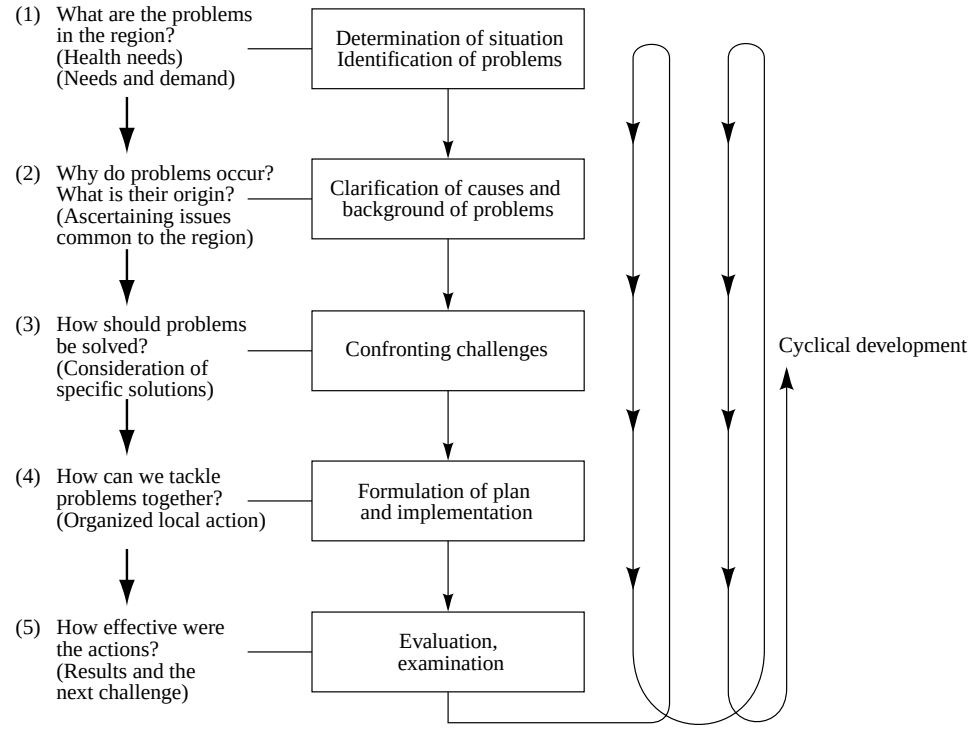
b) Setting of Objectives and Targets

Once the health needs of the target individuals, families, and groups have been determined, clear objectives and targets can be set for appealing to them.

c) Formulation of Action Plan

The action plan must be formulated in accordance with the basic policies of the organizations to which nurses belong, the health requirements that have been determined, and the objectives and targets. It is also important to gain the understanding of all the persons involved, consider the balance of the operation as a whole, and maintain flexibility in response to unexpected changes.

Example 1: Phases and Flow of Activities according to Regional Diagnosis Process



Source: Development of Joint Public Program and Activities between Health Centers and Local Communities
Noriyuki Nitta, Japan Public Welfare Journal, 37(10) supl., 76-77, 1990

i) Types of plan

(a) Long-term plan (determination of aims of program as a whole)

(b) Short-term plan (determination of specific actions and procedures for implementing the long-term plan)

* Annual plan
* Monthly plan
* Weekly plan
* Daily plan

ii) Allocation of responsibilities for establishment of plan

Responsibilities of local public hygiene organizations, public health nurses, etc.

(a) Implementation

Local government public hygiene organizations and public health nurses will be responsible for assessing whether things are proceeding according to the plan, objectively considering the overall balance, checking for discrepancies between the plan and actual operations, and revising the plan if necessary when problems arise.

Example 2: Action Plan

City/town/village Office

(Year) Public Health Nurse Action Plan # Name:

	Month	Total units	Month	Month	Month	Month	Month	Month	Month	Month	Month	Month	Month	Month	Month	Month		Notes
	Total units																	
	Time-off units																	
	Available units	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )		
	Home visits																	
Maternal and child health	3 years old infant health checks																	
	18 month-old infant health checks																	
Adult health	General health checks																	
	Health consultation																	
	Health education																	
	Functional training																	
Others																		
	Health promotion																	
	Immunization																	

one unit = 4 hours

The brackets in the “Available units” section are for separate computation of units apart from the scheduled hours.

(b) Evaluation

Evaluation is carried out at all stages from the collection of data to the setting of objectives and targets, formulation of activities, and their implementation.

(iii) What were the results of the activities as a whole?

(iv) Evaluation of plan and implementation process

* How did it respond to residents' health requirements?
* Was the subject targeting method appropriate?
* How were the instructional methods and content? (Did public health nurses perform their role satisfactorily in this respect?)
* To what extent were the targets and objectives realized?
* If they were not realized, what were the reasons for this?
* Were coordination with related organizations and utilization of social resources satisfactory?

Through this kind of evaluation and the resulting feedback, activities can be developed effectively.

(3) Main Public Health Operations at Local Offices

Public health nurses are in regular attendance in the communities where they have been posted. Through constant consultation with the local authorities and related organizations, they can get a precise grasp of local health problems, set long- and short-term targets and objectives, and independently formulate annual programs and visitation schedules.

1) Home Visits

To ensure that families fully understand medical and health guidance and are applying them in their daily lives, public health nurses provide monitoring and support through home visits.

a) First Home Visit

Once the families requiring home visits have been determined, the first visit is made as soon as possible. Pregnant women, mothers who have just given birth, or persons who have just been diagnosed as sick are in particular need of home visits. The advice given by the nurses is usually followed quite faithfully at first, but with the passage of time people start doing things in their own way and the effects of guidance tend to diminish.

On the first visit, it is best for the public health nurse to place priority on strengthening mutual understanding and establishing a relationship of trust with the subject, while acquiring a detailed understanding of his or her situation, and to provide guidance only on the matters that are most urgently required. The nurse can gain a precise grasp of the subject's situation by asking, listening closely, and observing carefully. These details should include the subject's state of health (or illness), living conditions or treatment situation, infant development, and economic situation, as well as the subject's attitude to health, values, thoughts, and feelings.

b) Home visit guidance schedule and continuous visits

Having determined what kind of support the subject needs on the basis of the information received, the public health nurse sets guidance targets. The frequency of home visits is determined according to the Assessment Charts (see Example 3) upon which guidance from the second visit onwards is based. In the process of this guidance, the contents and methods of persuasion are adjusted according to the subject's response.

c) Procedures after home visits

i) Keeping records

* Detailed records must be made of what has been ascertained and observed, including details of the case, living conditions, and treatment, as well as the subject's psychological state, living environment, and economic situation.
* Records must be kept of guidance provided and the subject's response.
* Records must clearly show the process of guidance.
* Guidance must be assessed to assist in formulation of future plans.
* Points that will assist public health nurses in their own research should be noted.

ii) Coordination with staff in related occupations

iii) Assessment of home visit guidance

During or after guidance, an assessment is made regarding the extent to which the objectives of guidance have been achieved and, if they have not been achieved, the reasons for this. As well as evaluating the effects of guidance, the lessons learned can be incorporated in future home visits.

2) Health Counseling

Necessary guidance and advice are provided regarding both physical and mental health in order to promote sound health management in the home.

a) Counseling at Public Health Centers

Counseling is an important means of discovering abnormalities or diseases of local residents at an early stage, as well as confirming good health and further promoting it. For public health nurses, it provides a vital opportunity for coming into contact with individual residents. Citizens may seek advice from a public health nurse regarding child care or health concerns or problems, or the nurse may be proactive in giving them advice on health management.

Public health nurses must respond in a friendly and sincere manner towards visitors to Public Health Centers. The nurse should first ascertain their concerns and requirements, taking care not to make any mistake in diagnosis of the problem, respond appropriately to the patients' needs, and provide advice so that they can cope with the situation themselves.

1. Midwife assistance assessment chart

Item	Category	Points
1. Disease related to pregnancy/delivery (complications)	a. Yes	7
	b. Possibly	6
	c. None	5
2. Health checks	a. None, unclear	7
	b. Occasionally	6
	c. Regularly	5
3. Pregnancy and delivery history	a. Record of juvenile or advanced age pregnancy	7
	b. First birth	6
	c. Previous birth(s)	5
4. Home environment	a. Serious problem requiring immediate solution	7
	b. Some problems	6
	c. No particular problems	5
5. Employment	a. Employed expectant mother (including employment in agriculture or commerce)	7
	b.	
	c. Full-time housewife	5
6. Contraception guidance	a. Necessary	7
	b.	
	c. Not necessary	5
7. Subtotal		
8. Public health nurse's discretionary points		7
9. Total points		

2. Newborn Assistance Assessment Chart

Item	Category	Points
1. Weight at birth	a. 2,000g or less	6
	b. 2,001g - 2,500g	5
	c. 2,501g or more	4
2. Condition at birth	a. Perinatal abnormality	6
	b. Congenital disorder	5
	c. Normal	4
3. Development value (weight)	a. Less then 3 percentiles/ 97 percentiles or more	6
	b. Less than 10 percentiles/ 90 percentiles or more	5
	c. 10 percentiles or more/ Less then 90 percentiles	4
4. Disorders, abnormalities in development	a. Disorder, slow development	6
	b. Possible disorder, signs of slow development	5
	c. No problems	4
5. Medical management	a. None, uncertain	6
	b. Inappropriate management	5
	c. Appropriate management	4
6. Health checks	a. No health check three-four months after birth	6
	b. Health check three-four months after birth	5
	c. Regular health checks	4
7. Child care situation	a. Problems	6
	b. Slight problems	5
	c. No problems	4
8. Subtotal		
9. Public health nurse's discretionary points		7
10. Total points		

3. Infant Assistance Assessment Chart

Item	Category	Points
1. Growth, development	a. Slow	8
	b. Possibly slow	7
	c. No problems	6
2. Disorders, abnormalities	a. Yes	8
	b. Possibly	7
	c. None	6
3. Medical management	a. None, uncertain	8
	b. Inappropriate management	7
	c. Appropriate management	6
4. Regular health checks	a. No	8
	b.	
	c. Yes, not applicable	6
5. Child care situation	a. Problems	8
	b. Slight problems	7
	c. No problems	6
6. Subtotal		
7. Public health nurse's discretionary points		7
8. Total points		

b) Telephone counseling

Public health nurses also provide telephone counseling on a variety of health-related matters to residents who call the Public Health Center. This is very convenient in cases of emergency, or when callers need immediate information. Nurses must try to provide simple and easily comprehensible counseling over the telephone and be prepared, if necessary, to pay a home visit or ask the caller to visit the center.

c) Different types of health counseling

There are various kinds of health counseling, including expectant and nursing mother counseling, baby and infant counseling, child development counseling, medical care counseling, adult/senior citizen counseling, and psychological counseling.

3) Health education

Health education provides the necessary knowledge to conduct a healthy life, fostering healthy habits and attitudes.

Health education aims to change people's behavior by means of discussion of experiences among members of the social group so that the group influences and encourages them to lead healthy lives. Through this mutual influence of members of the group, people decide as a group to adopt attitudes and behavior conducive to a healthy life and positively put these resolutions into practice.

a) Main points of guidance

* Establishment of a basis for the region and lives of individual families
* Guidance must be practical and concrete.
* To be regularly repeated until healthy living habits are established.
* Contents must be determined according to the subject, time of life, etc. and systematically implemented.
* Opportunities for group guidance should be seized and created.

b) Guidance methods

* Classroom activities

In addition to being the main form of education at schools, classroom activities have also been systematically conducted in the field of social education through women's classes, youth classes, etc. In the work of public health nurses, group instruction using classrooms has been extensively applied, for example, for mothers' classes and classes for newly married couples. Classroom activities may be described as short, methodically conducted lecture courses of four to six installments aimed at a group of people in a similar situation. They mainly take the form of lectures (see below), but may also include practical demonstrations and training.

* Lectures

  Basically, the most appropriate lecturing method is a through explanation of a certain topic to ensure that the participants clearly understand it. When giving lectures, the following points must be borne in mind.

c) Evaluation of health education

* Was the content satisfactory?
  - Was it understood by the participants?
  - Were the participants made aware of the problems?
  - Was communication possible among the participants?
  - Was the content a theme that can be pursued?
  - Were there questions and a lively discussion?
* Were the location and time suitable for the participants?
* Were the class opening and closing procedures, duration, venue, and teaching materials satisfactory?
* Was the staff line-up appropriate?
* Was the attendance rate satisfactory?
* Were plans made for the next program?

4) Nutritional Guidance

Nutritional guidance is based on an overall diagnosis (study and analysis) of the subject's everyday life, mainly from the three main aspects relating to health; nutrition, exercise, and recreation. The nurse demonstrates appropriate, concrete methods of improving health, ensuring a stable supply of food, and improving food culture in order to alter awareness (motivation) and behavior.

Although eating habits are a very personal matter, the foods that people eat and their dietary customs are greatly influenced, and not infrequently restricted, by the social and economic environment of the region where they live. It is therefore necessary to provide nutritional guidance based a sufficient grasp of the relationship between dietary habits and environmental factors.

5) Group Medical Examinations

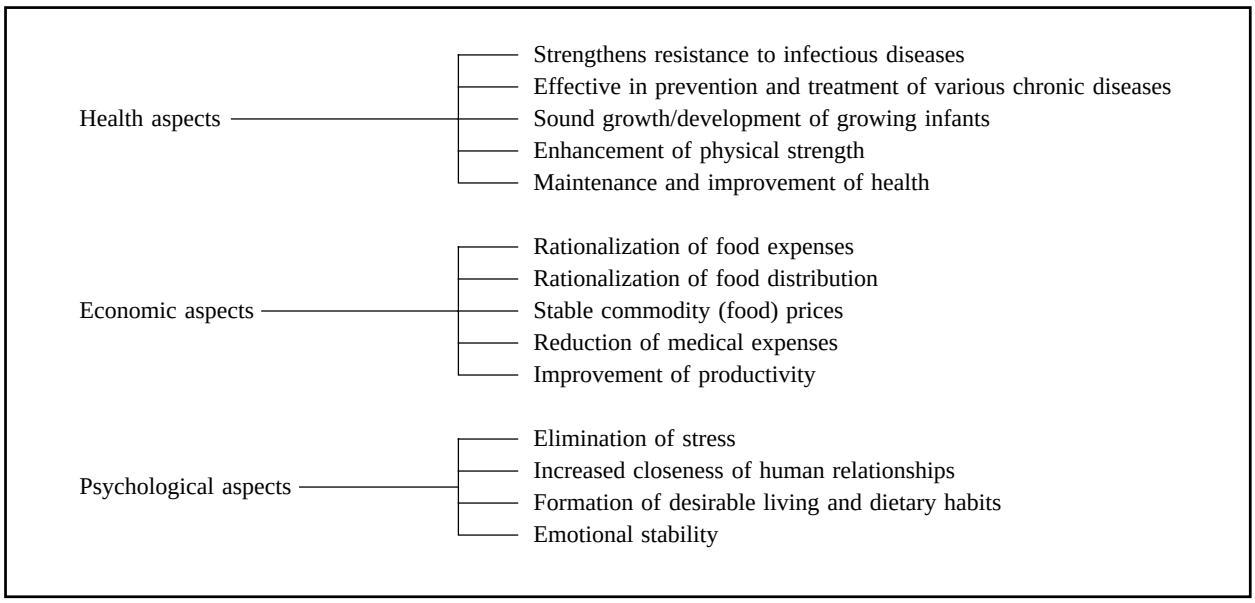
In order to efficiently perform the work of discovering at an early stage those who are ill or at risk of becoming ill, providing correct health management know-how and motivating people to acquire healthy habits through guidance on nutrition and living habits, it is essential to obtain a precise grasp of their condition by means of the following kinds of medical examinations.

* Medical examinations according to life stage
* Pregnancy tests: Early discovery of abnormalities during pregnancy
* Infant examinations: Checks of physical and mental development of infants, fostering of healthy

habits, and guidance and support for parents in order to prevent illness

* Medical examinations of schoolchildren
* Medical examinations of residents
* Medical examinations at industrial and commercial sites

Figure 1: Significance of Nutritional Guidance



Holding gatherings where dishes made from locally procured ingredients are served or cooking demonstrations at private homes in coordination with women's groups or members of groups promoting the improvement of living standards tend to increase the number of participants.

(4) Care of Emergency Patients (see Reference Document 2: "Treatment Guidelines for Public Health Nurses")

Public health nurses posted on outlying islands or remote areas are required to provide treatment and care when emergency cases arise. The main points are as follows.

* Assess the patient's condition.
* Report the patient's condition to the main hospital and receive instructions (when no doctor is present at the scene).
* Contents of report: patient's age, sex, condition, previous history, etc.
* If the doctor requests a helicopter to transport the patient, have the family make the necessary preparations.
* Keep in close touch with related organizations.
* Notify the Public Health Center.

* Keep a record of care provided.
* Confusion can be avoided if a route map of the island or remote area is on hand.

(5) Health Promotion and Fostering of Regional Organizations - Health Promotion Activities involving Local Residents

In order to develop an awareness of health problems and the importance of living healthily, it is important for residents to share their thoughts and teach each other through their daily interaction so that they develop the desire to lead a healthy life.

When people cannot deal with problems on their own, it is very effective to meet others with similar concerns, think about them together, and learn from and encourage each other. The process of encouraging residents to be concerned, talk with each other, and lead healthy lives is very important.

1) Health Promotion Activities of Regional Organizations; solving each individual's health problems together

* Residents' activities
  Residents' independent self-help activities (participation as volunteers)
* Finding specific solutions to specific problems
  Since problems vary from region to region, there are no standard solutions. The first essential step is for residents to identify problems that have caused them great concern in their own lives and consider the best ways of solving them.
* Joint projects between local citizens and experts
  In order to solve problems, people may sometimes receive guidance or advice from experts or they may cooperate with a project being conducted by an administrative organization.
* The area of the region is not fixed.
  The area over which activities are conducted may vary according to objectives.

2) Basic Principles for Activities of Regional Organizations

The first prerequisite for forming an organization is the joy and sense of purpose that the members feel about being participants in this group.

* The participants must first be clearly aware of their aims and how they can be achieved. This is the starting point of all activities.
* It is essential to create an atmosphere in which participants can express their views freely and frankly.
* It is important to clearly determine the responsibility of each participant and then ensure that these obligations are met.
* Activities should be based on research. Participants first conduct thorough studies, for example, on eating habits and food culture, and only then do they embark on training and practical

implementation.

3) Roles of Leaders; guidance, assistance, coordination

Leaders should not stand in front of the group and give orders or instructions. While suggesting problems and giving encouragement, they should give guidance, provide assistance, and serve as coordinators to increase solidarity. It is important that leaders make themselves approachable by adopting the attitude of an equal rather than a superior.

Above all, it is essential to create a spirit in which participants find group activities stimulating and enjoyable by allocating roles so that they can learn from each other.

4) Support from Experts

Although the operations of regional organizations are essentially spontaneous activities initiated by local people, various kinds of guidance and advice from experts are necessary for conducting training and implementing projects.

(6) Coordination and Cooperation with Related Organizations

Since local regions contain many public entities such as hospitals, clinics, Public Health Centers, local authorities, community centers, and agricultural improvement promotion offices, as well as related associations such as doctors' associations and nurses' associations, it is important to make effective use of these organizations through active coordination and cooperation with them.

* Work in close cooperation with doctors at clinics and other main doctors to promote the continuous provision of medical treatment to those who require it.
* Coordinate with clinics and other medical institutions to ensure the prompt commencement of treatment of persons whose treatment has been suspended or are not receiving treatment, or persons showing symptoms of illness.
* In addition to the above, maintain contact with local chiefs or the equivalent, women's groups, members of maternal and child health promotion groups, etc.

Promote deeper understanding of public health nurses' activities by collecting and disseminating materials and sharing information about cases whenever necessary.

(7) Public Health Nurse Activities involving Residents

* Participation in drawing up public health programs
* Public health exhibitions/presentations
* Social welfare festivals
* Other activities

Conducting campaigns to promote measures against parasites or tuberculosis is an effective means of disseminating hygienically-oriented thinking throughout the whole region.

(8) Administrative Procedures

1) Maintaining a good environment, e.g. keeping public health nurses' offices clean
2) Administering medical supplies, equipment needed for public health guidance, offices supplies, etc.
3) Maintenance and control of records and documents at the public health nurses' offices
   * Attendance book
   * Document control record
   * Office supplies receipts and payments record
   * Equipment register
   * Postage stamp receipts and payments record
   * Telephone use record
   * Daily work record

4) Uniforms must be neat and clean as well as suitable for public health nurse activities

   (Example)

   Top: White blouse

   Skirt or pants: Navy blue

REFERENCES

<Japanese>

JICA Okinawa International Centre (1997) *Okinawa ken ni okeru hoken katsudo guide book [Okinawa Public Health Activities Guidebook]*. JICA.

Medical Coopearation Department (1996) *Solomon shoto primary health care suishin project syuryo jihyoka hokokusho [Evaluation Report upon Completion of the Solomon Islands Primary Health Care Project]*. JICA.

Okinawa Nursing Association, Public Health Nursing Association (1967) *Okinawa no koushu eisei kango jigyo 15shunen kinenshi*.

Prevention Division, Environmental Protection Department (1983) *Hokenfu binran [Public Health Nurses Handbook]*. Okinawa Prefecture.

REFERENCE DOCUMENT 1: THE TWELVE PRINCIPLES OF PUBLIC HEALTH CARE ACTIVITIES - WILLIAM RATHBONE

1. In all pubic health work it is essential to study the problems and requirements of the region before commencing operations and to conduct regular studies thereafter.
2. Public health care work must be supported by the main organizations in the region.
3. Public health work must not, in its spirit or in itself, be religiously biased, linked to any political party, or racially prejudiced.
4. Persons put in charge of public health operations must be directors of Public Health Centers or recognized as leaders in the community.
5. Public health projects must reach all the people living in the region.
6. Appropriate records must be kept.
7. All opportunities must be taken to cooperate and coordinate with other organizations and persons connected with them.
8. Only persons with public health nurse qualifications may perform public health duties.
9. It must not be forgotten that health education for individuals, families, and the general public is an important duty of public health nurses.
10. Professional ethics must be strictly observed.
11. Continuous educational programs should be provided for public health nurses.
12. Working hours and the number of days off should be clearly stipulated.

Reference Document 2: Treatment Guidelines for Public Health Nurses

Treatment guidelines were first drawn up as "Work Standards" in 1951 and partially revised the following year. In 1971, these standards were reviewed and completely revised, resulting in the "Treatment Guidelines for Public Health Nurses." Since both clinical nursing and public health nursing are both closely related to the medical treatment provided by doctors, it is difficult to clearly define its limitations.

However, the real problem is that, even though treatment is generally provided by doctors themselves or by nurses under instructions from doctors, nursing personnel are often placed in situations where they have to provide some form of treatment in place of doctors or without doctors' instructions. Since public health nurses, unlike clinical nurses, often come into contact injured or sick people independently during home visits, etc., they have to provide medical treatment beyond the normal scope of public health care work and consequently experience anxiety to a certain extent in the course of their daily duties.

Moreover, among diseases that have become public health problems in recent years, doctors currently tend to delegate to public health nurses a considerable portion of treatment of tuberculosis, hyperpiesia, etc. that they would normally perform themselves for the purpose of diagnosis. Indeed, if doctors did conduct all of this treatment themselves, this would significantly impede the promotion of public health operations.

To ensure the smooth and anxiety-free implementation of public health nursing in these kinds of situations, the scope of the treatment that can be left to public health nurses must be determined through discussion between doctors and nurses to ensure that nurses understand that they have been instructed to give treatment within this scope and that these practices are maintained. However, there are of course limits to this scope, and these criteria are stipulated in the treatment guidelines.

Strictly speaking, these sorts of guidelines regarding treatment and procedures should be determined through discussion between the doctors and public health nurses working in the region so that nurses receive prior consent to perform treatment or, in certain cases, can obtain a doctor's consent after providing treatment. However, due to the nature of the system of physicians in Okinawa, or to the way nursing has been conducted, it is still difficult for both doctors and nurses in each district to come to make appropriate arrangements from their independent standpoints.

Consequently, with the consent of the Okinawa Physicians Association, examples of the basic approach and the extent of treatment by public health nurses have been provided and these have been used as the basis for facilitating discussions between doctors and public nurses. It is therefore possible that additions might be made locally in collaboration with the local doctors or physicians association. (In such cases, however, a broader interpretation that goes beyond the basic principles is not acceptable.) These guidelines should be reviewed in accordance with advances in medicine, the appearance of diseases, or changes in the social situation.

Okinawa Medical Association Document No. 145
February 24, 1971

Fumio Yamakawa
Director of Health and Welfare Department

Approved by Zenshi Inafuku
Chairman, Okinawa Medical Association

Treatment Guidelines for Public Health Nurses (reply)

The above matter, concerning which we received a request in Ministry of Health and Welfare Bulletin No. 50 (January 28, 1971), has been discussed by the Board of Directors of this Association. Based on the conclusions reached by the Board of Directors, our reply is as follows.

No objections to these treatment guidelines have been expressed.

Treatment Guidelines for Public Health Nurses

General Principles

1. All medical treatment should be performed after diagnosis by a doctor and treatment must not be provided arbitrarily even in emergencies.
2. Upon encountering an injured or sick person, recommend to that person or his or her family that he or she receive treatment from a doctor.
3. Diagnoses based on measurements and examinations must all be made by doctors. The results obtained from measurements and examinations must therefore be precisely recorded or reported.
4. The stipulated treatment must not be repeated without instructions from a doctor.
5. If the doctor in charge gives instructions that differ from the stipulated treatment, these instructions must be followed.
6. If a doctor gives instructions orally, have these instructions recorded in written form as soon as possible.
7. Even when informed orally by injured or sick persons of instructions given to them by a doctor, always try to contact the doctor and confirm these instructions before implementing them.

Based on a clear understanding of the above general principles regarding the application of the treatment guidelines, public health nurses are required to promote closer working relationships with doctors to ensure that injured or sick persons are not harmed or inconvenienced in any way.

Treatment Guidelines

Procedure	Standards for Treatment	Comments and Precautions
I. Injections	(1) Intramuscular and intravenous injections are to be administered by a doctor. (2) Subcutaneous and intracutaneous injections (i) As a general rule, only to be administered on doctor's orders. (ii) When cardiotonics or other agents require cautious administration with respect to the number of injections in an emergency, a doctor must be notified immediately. (iii) If a doctor has provided orders in advance but cannot be present when the injection is to be administered, the procedure may be performed upon receipt of written orders detailing the medication to be used and its method of administration, dose, and site of injection. This is not required in the case of mass immunization programs.	Re (ii): This indicates situations requiring the use of cardiac stimulation or hemostasis where the patient's condition may worsen if treatment is not given. For cardiotonics by way of example, this is restricted to medications such as Vitacampher or equivalent that do not affect other functions or have no adverse effects. Re (iii): Indicates circumstances such as tuberculin tests given at a specific location for public health purposes, or situations where a home visit is made for a person who cannot receive treatment at that location. It does not indicate injections for the treatment of conditions such as tuberculosis, sexually transmitted disease, or hypertension, or injections of nutrients or hormone preparations.
II. Examination	(i) To be performed by a doctor. (ii) If a doctor is unable to attend, orders specifying the location at which blood is to be collected, the purpose of blood collection, and the amount of blood to be collected should be given in advance, and after completion of the procedure, the name and address of the person from whom blood was collected is to be reported to the doctor.	Re (ii): Indicates tests performed for public health purposes, when the tests are to be performed at specific locations or on home visits.
III. Prescriptions for internal medicine	(i) As a rule, performed on doctor's orders. (ii) In acute care situations, medication orders should be obtained in advance from a doctor (public, private, or local public body), and the drugs administered within the scope of such orders. The discretionary selection of drugs by district health nurses must be stringently controlled.	Re (ii): In cases where clinical treatment guidelines are relatively well established, thoroughoing care should be taken to avoid errors of judgment by ensuring that doctor's medication orders corresponding to the severity of the disease state are received in advance.
IV. Prescriptions for External Medicine	(i) As a rule, to be applied on doctor's orders. (ii) When treatment is given in emergency or acute care situations in the absence of doctor's orders, a doctor should be consulted later. Any intervention should not interfere with subsequent treatment to be provided by a doctor. (iii) In disease prevention or treatment situations, a doctor's consent should be obtained and any treatment given should be within the scope of that consent. (iv) Proper guidance pertaining to use is to be provided for topical agents that are normally kept in the house.	Re (ii): An emergency situation is defined as one in which the patient's life is in danger, and an acute care situation is one in which treatment is mandated, even though the symptoms may be mild. Re (iii): Disease prevention or treatment signifies, for example, the application of an ointment to a child's skin to avoid exacerbation when signs of incipient eczema are discovered, or treating a symptom that is already present and mild in severity, to prevent exacerbation.

Procedure	Standards for Treatment	Comments and Precautions
V. Measurements	(1) Measurements of physical function (visual acuity, color perception, hearing, vital capacity, grip strength, back muscle strength, traction and other simple tests may be conducted on doctor's orders, and those requiring more precision are to be conducted personally by a doctor. (2) Tuberculin test (i) As a rule, to be conducted by a doctor. (ii) Where necessary, the test may be conducted according to predetermined criteria, and the findings reported accurately to a doctor. (3) Blood pressure measurement (i) As a rule, to be conducted by a doctor. (ii) When blood pressure is to be measured in the general population as a public health strategy, measurements are to be taken in accordance with criteria prepared after discussions with a doctor, guidance is to be provided, and results are to be reported to a doctor. Where necessary, guidance is to be given for follow-up activities.	
VI. Tests	Where necessary, the following tests may be performed on doctor's orders. (1) Stool examinations for parasite eggs (2) Simple urinalysis procedures (3) Blood sedimentation test (4) Hemoglobin test	Re (2): Using Tes-Tape, tests of variables including protein, glucose, urobilinogen, and phenylketon etc. Re (4): For detecting anemia in expectant and nursing mothers, tested using a hemometer or similar instrument.
VII. Irrigation	(i) As a rule, to be undertaken by a doctor. (ii) Where necessary in situations where emergency first aid is given for trauma, irrigation of the eyes or instillation of eyedrops may be undertaken on doctor's orders and reported after the event.	
VIII. Enema	(i) As a rule, to be performed by a doctor. (ii) Where necessary in an emergency, may be performed on doctor's orders within the scope of such orders, and reported to a doctor after the event.	Re (ii): As per prescriptions for internal and external medecines
IX. Dietary Prescriptions	(i) Dietary prescriptions for specific diseases are to be issued by a doctor. (ii) Guidance on dietary intake with the intention of preventing disease or sickness may be given on receipt of doctor's orders, within the scope laid down in those orders. (iii) Where necessary in emergency situations for patients with disease, may be given on receipt of doctor's orders, within the scope laid down in those orders.	Re (ii): As per Prescriptions for internal and external medicines.

Examples of Treatment for Selected Symptoms

Symptom	Treatment	Approved medical interventions	Medical intervention that should be approved in special regions
Sore throat	1. Give fluids. 2. Isolate the patient until diagnosis is definite. 3. Have the patient gargle with a warm mouthwash. 4. Give a liquid or semiliquid diet. 5. Wrap oral secretions in paper and incinerate.	Mouthwashes can include salt water, or solutions of boric acid or baking soda in water.	
Burns (Localized burns)	1. Cool the burnt area with cold water or baking soda. 2. Cover the burn with clean gauze and bandage loosely. Cool with an ice pack on the bandage if the pain is intense. 3. Ensure that blisters are not broken and refer to a doctor.		
(Extensive burns)	1. Sluice with cold water to rapidly lower the heat in the patient's clothing. 2. Roll the patient in a blanket, keep warm, and lower the head. 3. Cut away the patient's clothing within reason. 4. Give fluids. Water or tea is acceptable, but if possible, give half a glass of a solution of salt and baking soda in water. Allow the patient to drink whenever desired. (Stop if hiccups or nausea develops.)	Prepare this drink by adding half a teaspoon each of baking soda and table salt to 1 liter of water.	
(Chemicals in the eye)	1. Irrigate the surface of the eye with copious quantities of water. Take care to rinse the underside of the eyelid too. 2. Always refer to a doctor for further treatment.		
Styptics	To keep the patient calm, avoid conversation and exclude visitors. To prevent the risk of asphyxia, position the patient to allow blood to drain readily. If the patient's condition remains unchanged, have the patient drink a glass of concentrated salt water, and repeatedly apply an ice pack to the chest for short periods. Report the volume of blood lost to a doctor.		Styptics Administer injections of Adona, Thrombogen, or Kativ. If the patient's heart is severely weakened, give an injection of a cardiotonic agent (Vitacampher), then report to a doctor.
Trauma	1. If bleeding is profuse, achieve hemostasis by applying a pressure bandage. 2. Always immobilize with a splint if a fracture is present or suspected. 3. Treat sprains or bruises with cold compresses and keep the patient rested.	If the surface of the wound is contaminated, wash the wound (with 0.5% physiologicalÅ@saline solution, 2% benzalkonium chloride, 3% boric acid solution, or hydrogen peroxide solution), then disinfect	

Symptom	Treatment	Approved medical interventions	Medical intervention that should be approved in special regions
		the wound surface using 2% mercurochrome or tincture of iodine for infection prophylaxis and cover with sterile gauze.	
Convulsions	Loosen clothing, lay the patient in a resting position, place a tongue depressor, spoon, or similar instrument between the teeth to ensure that the tongue is not bitten, and contact a doctor.		
Anorectal problems	Clean the affected area. If a prolapsed rectum does not spontaneously resolve, gently reduce the prolapse using lubricated gauze or cotton wool. For long-standing prolapses, those with profuse bleeding, or those with pronounced blood congestion, apply cold compresses and promptly seek medical advice.		
Dog bite	Disinfect the wound with tincture of iodine, mercurochrome, or 0.1% mercuric chloride, and refer to a doctor. Ascertain whether the dog is rabid. Have the patient consult a doctor as soon as possible.	Prophylactic inoculation on doctor's orders is recommended.	
Poisonous snake Habu pit viper	1. Rest the patient so that the poison doesn't spread to other parts of the body. 2. Apply a pressure bandage near the middle of the bite. (Sufficiently tight to block venous, but not arterial blood flow.) 3. Give fluids. (Tea, boiled water)		Inject habu serum if available.
Eczema	Depending on the symptoms, select the appropriate type of ointment. Refer to a doctor if the symptoms are severe.	As a rule, use the remedies listed below for each type of rash. Redness : Zinc oxide lotion Drug eruption : Wilson paste Erosion : Zinc oxide lotion or zinc oxide ointment	
Bedsores	Clean the area and take measures to prevent infection. Provide a pressure-relieving cushion for the affected area, and occasionally change the patient's position. Bathe any red areas with dilute nitric acid, dry thoroughly, and take measures to prevent infection. Apply zinc oxide ointment or zinc oxide lotion to the bedsore area.	Bathe the bedsore area with mercurochrome and apply zinc oxide ointment or zinc oxide lotion. Alternatively, use a 0.1% acrinol compress.	

Symptom	Treatment	Approved medical interventions	Medical intervention that should be approved in special regions
Nosebleed	1. In the first instance, arrange for the patient to see a doctor. Raise the head and ensure rest. If the bleeding is copious, arrange the patient's position to prevent asphyxiation. 2. Pack absorbent cotton wads into the nasal cavity or apply external pressure by pinching the nose. 3. Apply a cold compress.	When bleeding is copious, administer an injection of a hemostatic agent. Vitamin K (e.g., Kativ).	
Carbuncle	Avoid external irritation and apply a local cold compress.	After disinfecting the affected area, apply a boric acid ointment, or a compress containing boric acid solution or acrinol solution.	
Poisoning	Promptly remove the patient to fresh air. Loosen clothing and ease breathing, keep warm and ensure blood flow in the limbs is adequate. Above all, do not allow the patient to sleep. (Keep stimulating the patient.) Use ammonia or smelling salts.	Begin artificial respiration.	If the patient has a severely weakened heart, administer a cardiotonic, and if dyspnea is pronounced, give an injection of a respiratory center stimulant. Use Vitacampher as a cardiotonic.
Food poisoning	Take steps to make the patient eliminate the food as quickly as possible. Give fluids and keep warm.	Give a soap or glycerin enema.	
Drug poisoning	If an agricultural chemical has come into contact with the skin, the contaminated clothes should be promptly removed. Wash off the skin with soap and running water. Keep warm. If drugs have been taken internally: 1. Give copious quantities of warm water. 2. Induce vomiting by irritating the throat. (Avoid steps 1 and 2 if gastric perforation is suspected.) 3. If the cause of poisoning is an acid or alkali, administer a neutralizing agent at the outset. Induce vomiting naturally. Repeat again after the patient has vomited. 4. If rat poison has been taken, take steps 1 and 2, then give raw egg-white and keep warm. 5. If sleeping pills have been taken and the patient is conscious, take steps 1 and 2, then give tea, coffee, or another stimulant. 6. If breathing stops, perform artificial respiration.	Perform artificial respiration Use either baking soda, lime water, or milk of magnesia to neutralize acids. Acidity can be relieved with milk, egg-white, canola oil, or olive oil, or a similar substance. To neutralize alkalis, give household vinegar, lemon juice, or similar substance. Alkalinity can be relieved with copious quantities of milk. To neutralize sleeping pills, use 3% hydrogen peroxide, 1-2% baking soda, or 1-2% tannic acid solution.	If the patient's heart is especially weak.

2. Maternal and Child Health Activities

Sachiko Nakazato
Professor, Okinawa Prefecture College of Nursing

Kiyoko Oshiro
Chief, Health and Welfare Section,
Chuou Health Center, Okinawa Prefecture

Yoshiko Shimoji
Manager, Health and Welfare Section,
Chuou Health Center, Okinawa Prefecture

2-1 Health Management for Expectant and Nursing Mothers

(1) Maternal and Child Health Record Books

Maternity record books, in addition to recording the health of mother and child from the commencement of pregnancy to birth and of the child from birth to school age, also contain columns for recording the results of check-ups and for the mother's remarks, making it possible to keep a complete record of maternal and child health management. In regions with low literacy levels, maternity record books contain illustrations, etc. so that they can be understood at a glance, making them easy for mothers to use and encouraging regular record keeping. Mothers should be made aware that records of medical examinations, health consultations, immunization, and nurses' home visits constitute highly important information.

(2) Prenatal Checkups and Health Counseling

On outlying islands and in remote areas that have few medical institutions and limited transportation facilities, public health nurses provide mobile check-up services together with doctors to ensure that expectant mothers are examined at least once in the first half and once in the second half of their pregnancies. They also provide mobile health counseling services together with midwives, making use of community halls and the like. Working in cooperation with doctors and midwives, public health nurses ask expectant mothers detailed questions about their condition, conduct urine analysis and anemia tests (using hemometers), and take measurements such as blood pressure. They also provide health counseling, teaching expectant mothers how to detect early indications of abnormalities such as signs of possible miscarriages or premature birth, or toxicosis, so that they can report them to public health nurses, doctors, or midwives. When public health nurses provide health counseling alone, it is particularly important to conduct a thorough check-up.

(3) Classes for Mothers and Parents

To promote the better health of mothers and infants, public health nurses must be able to teach the basic knowledge and techniques needed in everyday life. Based on a clear grasp of the culture, religion, and customs of the region, instructions are given concerning specific points that can be improved. Classes are provided not only for expectant and nursing mothers but also for their husbands. By gaining a deeper understanding of maternal and child health, husbands can provide strong support for their wives during their pregnancies. In regions where mothers or mothers-in-law have strong influence, they should also participate in these classes. The contents include regional maternal and child health problems, the course of pregnancy and birth, preparations for birth, nutrition during pregnancy, working while pregnant, child care methods, family planning after birth, and the husband's role. Special teaching materials for regions with low literacy rates, such as posters and picture cards, must also be planned and prepared.

(4) Home Visits

Through home visits, public nurses ascertain the health not only of mothers and babies but also the families as a whole, enabling them to provide guidance and assistance closely related to their lives. Particularly in remote areas with few medical facilities, it may also be necessary to give instructions on giving birth at home. By actually meeting families, nurses can give more concrete advice on the roles of each family member in dealing with maternal and child health issues. Health counseling in particular should be provided on the basis of a good understanding of local culture, customs and religion.

(5) Preparations for Birth

In view of the possibility of early birth, it is safest to prepare the necessary articles for delivery, lying-in after birth, and baby care by around the 24th week of pregnancy. In regions where a distribution system or a money economy have not been established, these items will have to be found in the home or provided by neighbors. One helpful method would be to establish a mutual financing association system (for the provision of funds and materials) as in Okinawa. It is also necessary to prepare lists of the absolutely essential items for either birth at home or birth at a health center.

(6) Delivery

In post war Okinawa, in areas without medical facilities or doctors, many babies were delivered at home with the assistance of traditional birth attendants (TBA) who did not have formal medical qualifications. In those days, public health nurses voluntarily underwent midwifery training at maternity clinics before they were stationed in remote areas. Together with the TBAs, they assisted with deliveries in rural villages and promoted safe health management. When public health nurses perform midwife duties in remote areas where there were doctors, they always have to take great care regarding cleanliness and sterilization. In working in cooperation with TBAs, nurses must also strive to educate local residents

and promote safe childbirth.

It is always necessary to understand local customs. In certain regions, for example, families may wish to move to the vicinity of the health center where a woman is to give birth.

(7) Health Guidance for Women Resting After Childbirth

In the first six to eight weeks after childbirth, the sexual organs and body as a whole, which have undergone anatomical and functional alterations due to pregnancy and delivery, return to their state prior to pregnancy. During this period, public health nurses give women resting after childbirth health guidance to ensure that they have a good understanding of their own bodies and take particular care regarding nutrition and lochia. Nurses provide guidance not only concerning the health but also the living environment of women after childbirth and their families so that they can devote themselves to looking after their children without extraneous concerns. Guidance is also given regarding the time mothers can start doing agricultural labor, etc.

(8) Family Planning

Family planning guidance is given both to women and their husbands. Since contraceptive methods may vary according to the literacy rate, culture, religion or customs of the region, this kind of information is essential for determining and teaching the most appropriate methods. It is particularly important to choose the most suitable teaching materials for the region. Continuous instruction should be provided making use of opportunities such as home visits and maternity health consultation.

2-2 Infant Health Management

Continuous health guidance is provided for the parents, extending from the period prior to birth until children become adults, in order to provide a basis for sound and healthy development throughout infancy and childhood.

(1) Methods of Determining the Infant Health Situation

1) In the course of their local duties, resident public health nurses visit homes where they see nappies(diapers) or baby clothes left out to dry.
2) Acquiring information through coordination with local midwives.
3) Requesting information from local leaders.
4) Requesting information from members of maternity health promotion groups.
5) Obtaining information from birth certificates.

(2) Children's nutrition

Since physical development is fastest during infancy, it is important to provide nutritional guidance

to promote the sound growth of infants.

1) Breastfeeding nutrition: Paramount importance should be placed on breastfeeding as the best form of nutrition for new-born babies. The advantages of breastfeeding are that it:
   * Strengthens immunity from disease.
   * Enhances interaction between mother and child.
   * Eliminates the risk of milk allergies.
   * Is the most suitable form of nutrition for babies; mortality and morbidity rates of breastfed babies are low.
2) Bottle-feeding: Even when bottle-feeding is necessary due to the insufficiency of mother's milk, breastfeeding should be given priority and the bottle-feeding only used to make up the deficiency.
   * When mixing milk powder for babies' bottles, nurses must be sure to wash their hands thoroughly, disinfect the bottle (milk container), store milk properly, and mix the powder according to the stipulated amount.
3) Baby food: At the age of four or five months, when babies' growth is particularly rapid, it is difficult to provide the necessary energy and nutrition with mother's milk alone. Since food other than mother's milk is also needed for teething, growth of digestive functions, and mental development, the baby should be steadily weaned to solid food from this time.
   * According to the baby's individual characteristics, balanced food that is tasty and easy to eat should be prepared.
   * To prevent food poisoning or diarrhea, heated fresh foods should be provided. When preparing food, care must be taken to wash hands and keep tableware, etc. clean.
4) Safety of water: Always use water that has been boiled.

(3) Home Visits

It is important to determine beforehand where and when babies are going to be born and, depending on the family situation, to provide education to parents and families concerning infant growth and development through home visits.

1) Observation of infant health: Increase in weight (measure weight manually or using baby scales), state and frequency of feces and urine, sleep patterns, physical check-up, etc.
2) Checking nutrition for steady growth and development: Insufficiency of mother's milk, strength of breathing, malnutrition, frequency of breastfeeding/provision of milk, etc.
3) Cleanliness
   * Infant's physical cleanliness: Check the condition of skin of all parts of the body, including the head, eyes, ears, mouth, neck, navel, groin, buttocks, etc.
   * Cleanliness of clothes and bedclothes
   * Keeping the living environment (children's room, etc.) tidy and clean
   * Bathing the child every day, or washing if bathing is not possible.

(4) Infant Health Counseling

In addition to guidance provided through home visits, public health nurses provide health counseling at meeting places (community centers, public health nurse offices, etc.).

When providing health counseling, education for child rearing can be made more effective through the use of audio education aids, etc.

1) In order to confirm steady development, teach mothers how to use measuring instruments so that precise measurements can be made. Appropriate advice regarding discipline and protective care should be given according to the development situation of each infant.
2) Use of maternity record books: Teach mothers how to record the state of their children's health using maternity record books.
3) Encourage mothers to communicate with parents of the same age so that they can exchange information on child care.

(5) Health Education

Using handmade audiovisual aids, etc. to make it easier for parents to acquire child rearing knowledge and skills, public health nurses provide health education so that all children in the region develop healthily.

By holding childcare classes and the like, nurses conduct preventive education concerning diarrhea, parasitic infections, and other diseases that have a major impact on children's health, increasing people's knowledge about children's growth and development.

(6) Disease Prevention

1) Even when children are developing healthily, medical examinations by doctors are necessary to check their condition. In order to discover congenital disorders or diseases at an early stage, health checks by doctors should be provided at least once in the first and second halves of the suckling period, once around the age of 18 months, once or twice at the age of two-three, and least once a year from the age of four onwards.
2) Nurses encourage parents to have their children undergo the immunization being promoted by WHO in order to prevent infectious diseases that lead to a high mortality when they can be naturally contracted, or which leave after-effects.
3) Safety education is conducted to prevent accidents that might occur as children develop.

(7) Assistance for Handicapped Children

Some children are born with mental or physical handicaps and some may later become handicapped through illness. Parents of such children can easily become isolated and suffer much anxiety. Since the economic burden of treatment is also very great, it is important to provide a loving environment and assistance. Above all, it is essential to create an environment in which handicapped children can

grow and thrive as unique individuals.

Public health nurses have fostered mutual support through the activities of parents' associations, etc. by holding classes on handicapped children for the parents of these children. A system is now being set up for infant health checkups, treatment and education counseling, handicapped child care, and handicapped child education.

(8) Sex Education at Puberty

To produce to healthy children, parents must be mentally and physically mature and financially independent. It is therefore essential to provide proper education at puberty. Public health nurses placed great importance on sex education, contraceptive education, and family planning guidance for young people.

Parents are required to provide sex education to their children in accordance with their development.

* Providing sex education to children also gives parents learning opportunities.
* Contraceptive education is essential for preventing girls from becoming pregnant in their teens, when they are still mentally and physically immature.

(9) Activities of Members of Maternal and Child Health Promotion Groups

Upon the request of municipal or community leaders, members of maternal and child health promotion groups conduct surveys to ascertain local problems relating to expectant and nursing mothers and infants, or to determine which of them have not received health checks or counseling or have not had their children vaccinated. Since the members of these groups are residents of the same community, they can serve as a vital link between local residents and the public health administration of local authorities. Before the maternal and child health promotion system had been established, this role was played by local women's groups which took a strong interest in local health management, exchanging information with public health nurses and notifying them of problems. The cooperation of these women's groups was particularly important for local group medical examinations.

Since women's groups may belong, for example, to the local church or temple in certain regions, it is important to utilize existing organizations according to the distinctive cultural characteristics or customs of the region. The promotion of health education and dissemination of an awareness of its importance creates an environment in which maternal and child health promotion activities are possible.

REFERENCES

<Japanese>

Activities of Public Health Nurses Stationed in Okinawa (1999) *Hitobito no kurashi to to moni 45 nen [45 Years Living with Local People]*. Okinawa Prefecture.

Boshi hoken manual (dai 3 ban) [Maternal and Child Health Manual (Third Edition)]. Shokodo. 1995.

Chiiki boshi hoken to hokenfu no hatasu yakuwari [Regional Maternal and Child Health and the Role of Public Health Nurses]. Perinatal Medicine, Vol. 9 No. 1. Tokyoigaku-sha. 1979.

Environmental Health Department, Okinawa Prefecture (1986) *Hokenfu binran (Hoken shido hen) [The Public Health Nurse Handbook (Health Education Edition)]*.

Health and Welfare Bureau (1969) *Kosei gyosei gaiyo ('72 fukki e no sihyo) [Outline of Health and Welfare Administration (Guidelines for Reversion in 1972)]*. Government of the Ryukyu Island.

Japan Public Health Association (1993) *Fumishimete 50 nen [Half a Century of Toil and Sweat-The History of Public Health Nurse Activities]*.

Japanese Government Study Group (1969) *Fushin ni yoru to omowareru shinshin shogaiji kento hokoku [Investigative Report on Children with Physical and Mental Handicaps Considered to be Caused by Rubella]*.

Mothers-and Children's Health and Welfare Association, supervised by the Maternal and Child Health Division, Children and Families Bureau, Ministry of Health and Welfare (1996) *Boshi hoken manual [Maternal and Child Health Manual]*.

Okinawa ni okeru hokenfu katsudo [Public Health Nurse Activities in Okinawa]. Tokyo Igakusha Vol. 17, No. 7. 1987.

Okinawa Society of Child Health (1989) *Okinawa shoni hoken no ayumi [History of Child Health in Okinawa]*. Child Health in Okinawa No. 16.

Ibid. (1983) *Okinawa shoni hoken kai no 10 nen [10 Years of the Okinawa Society of Child Health]*.

Ibid. (1995) *Okinawa shoni hoken kyokai 20 nen no ayumi [The 20-Year History of the Okinawa Society of Child Health]*.

Prevention Division, Environmental Health Department (1981) *Okinawa sengo no hokenjo no ayumi-hokenjo 30 shunen kineshi [Health Centers in Postwar Okinawa-Health Centers 30th Anniversary Edition]*. Okinawa Prefecture.

Public Health Nursing Association, Okinawa Nursing Association (1967) *Okinawa no koshu eisei kango jigyo 15 shunen kineshi [Public Health Nurse Operations in Okinawa-15th Anniversary Edition]*.

Ibid. (1982) *Okinawa no koshu eisei kango jigyo 30 shunen kinenshi [Public Health Nurse Operations in Okinawa-30th Anniversary Edition]*.

Public Health Promotion Division (1998) *Okinawa ken no boshi hoken [Maternal and Child Health in Okinawa]*. Okinawa Prefecture.