## Annex 5.1 Main Activities of the KEMRI-JICA Programme

| | Communicable Diseases Research and Control Project | Project of the Kenya Medical Research Institute | Project on Research and Control of Infectious Diseases | Research and Control of Infectious Diseases Project II | Research and Control of Infectious and Parasitic Diseases Project |
|---|---|---|---|---|---|
| **Diarrhoeal Diseases** | ➢ Basic diagnostic techniques for rotavirus using an electron microscope<br>➢ Retrieval of etiological agents of viral and bacterial diarrhoea in the selected areas, and the evaluation of pathogens | ➢ Analysis and diagnosis of viral diarrhoea<br>➢ Community-based cohort study of rotavirus infections in children in the Bahati division<br>➢ Analysis of fluctuations in faecal bacterial flora in Lari<br>➢ Analysis of short chain fatty acid and bile acid content in the faeces from the onset to the recovery from diarrhoea in diarrhoeal children residing in Lari | ➢ Epidemiological study of gastroenteritis symptoms caused by rotavirus in Nairobi, Nanyuki and Kitui<br>➢ Preparation of a brochure and video programme for measures including ORT<br>➢ Technical training on normal samples and negative staining at the workshop on electron microscopes<br>➢ Study on bacterial diarrhoea and water quality in Malindi.<br>➢ Etiological study for diarrhoeal diseases in Kitui and Nairobi<br>➢ Study and measures against cholera and dysentery in Mombasa | | |
| **ARI/OI** | | | | ➢ Isolation of bacterial, fungal and viral etiological agents and drug sensitivity tests<br>➢ Recommendations for changing standard curative drugs based on the results of drug sensitivity tests for major bacterial and fungal ARI<br>➢ Preparation of educational videos and more than 400 brochures | ➢ Establishment of methods for the diagnosis, prevention and treatment of opportunistic infections in both adults and children with HIV/AIDS. |
| **Hepatitis** | | ➢ Community-based longitudinal epidemiological study of viral hepatitis B in the Maragua district<br>➢ Trial Production of diagnostic reagents for viral hepatitis B | ➢ Establishment of a production system for diagnostic reagents for viral hepatitis B (HEPCELL I) in Kenya (45,000 tests/year)<br>➢ Trial Production of diagnostic reagents for viral hepatitis C<br>➢ Trial Production of diagnostic reagents for liver cancer<br>➢ Establishment of a Liver Disease Diagnosis Centre<br>➢ Training in liver disease diagnosis for doctors and technicians from 8 provinces<br>➢ Blood screening (65,021 samples were screened from July 1991 to May 1994)<br>➢ Workshops/Seminars on hepatitis | ➢ Introduction of Lyophilization for HBV diagnostic kits (HEPCELL II)<br>➢ Distribution of HEPCELL II to provincial hospitals (1,886 Kits were distributed from July 1996 to February 2000, and 69,373 units of blood were screened<br>➢ Share of HEPCELL II for HBV screening in the official sector was 60%<br>➢ Epidemiological studies on HCV<br>➢ Third Country Training (Blood Safety) | ➢ Production, QC and distribution of HEPCELL II.<br>➢ Development of a serum bank for hepatitis positive blood<br>➢ Establishment of a gene diagnostic system for various types of hepatitis<br>➢ O&M of a facility for the production of HEPCELL II.(After implementation of a grant aid project)<br>➢ Third Country Training |
| **HIV/AIDS** | | | | ➢ Development of a diagnostic kit for HIV (PA kit)<br>➢ Establishment of a production system for a PA kit using locally collected and purified antigens<br>➢ Comparison of a PA kit with other kits<br>➢ Isolation and characterization of virus with the application of molecular biological and epidemiological techniques<br>➢ Screening of antiviral plant extracts<br>➢ Demonstration of the short course administration of AZT (Zidovudine) to HIV positive mothers in reducing MTCT in West Kenya (Kisumu、Busia) | ➢ Development of a PA kit continues at the research level, and development of a new kit（KEMCOM）<br>➢ Monitoring of epidemic HIV strains<br>➢ Establishment of a counselling and education system<br>➢ Workshops/Seminars for PA<br>➢ Community health education in Western Kenya |
| **Schistosomiasis** | ➢ Field surveys to clarify the Schistosomiasis situation in Mwachinga and Mtsangatamu villages in the Kwale district<br>➢ To develop the facilities for safety water supplies | ➢ Evaluation of the control measures adopted in the previous project<br>➢ Mass-chemotherapy in Mwachinga and Mtsangatamu.<br>➢ Development of new diagnostic techniques (Urine ELISA) | ➢ Integrated methods (chemotherapy, water supply, environmental modification and health education in Mwachinga and Mtsangatamu | | |
| **Filariasis** | | | ➢ Epidemiological studies and mass-chemotherapy in three villages in Kwale | | |
| **Parasites** | | | | | ➢ Promotion of preventive measures through the school health approach (Mwea and Kwale)<br>➢ TCTP for parasite control |

Prepared by the investigation team

## Annex 5.2 Inputs by JICA

### Annex 5.2.1 Dispatch of JICA Experts (1/2)

| | Communicable Diseases Research and Control Project | | | | Project of the Kenya Medical Research Institute | | | | Project on Research and the Control of Infectious Diseases | | | | Research and Control of Infectious Diseases Project Phase II | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Long term | | Short term | | Long term | | Short term | | Long term | | Short term | | Long term | | Short term | |
| | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M |
| Leader | 2 | 39.3 | 2 | 6.1 | 1 | 12.5 | - | - | 1 | 69.3 | - | - | 3 | 74.7 | 2 | 0.4 |
| Coordinator | 1 | 38.5 | - | - | 2 | 60.0 | - | - | 3 | 121.0 | 1 | 4.2 | 2 | 59.1 | - | - |
| Virology | 5 | 65.4 | 6 | 2.9 | 10 | 157.8 | 7 | 12.6 | 4 | 47.3 | 5 | 3.8 | - | - | - | - |
| Bacteriology | 7 | 93.8 | 1 | 8.1 | 7 | 87.5 | 11 | 25.3 | 4 | 61.1 | 18 | 19.1 | - | - | - | - |
| Parasitology | 6 | 84.2 | 1 | 6.2 | 8 | 138.1 | 9 | 14.9 | 6 | 107.4 | 16 | 35.4 | - | - | - | - |
| Equipment Maintenance | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2 | 1.6 |
| HIV／AIDS | - | - | - | - | - | - | - | - | - | - | 2 | 0.8 | 3 | 59.1 | 24 | 32.1 |
| Viral Hepatitis | - | - | - | - | - | - | - | - | 2 | 57.6 | 10 | 9.4 | 3 | 50.8 | 8 | 7.7 |
| Viral Diarrhea | - | - | - | | - | - | - | - | 2 | 36.7 | 4 | 4.3 | - | - | - | - |
| ARI | - | - | - | - | - | - | - | - | - | - | 2 | 1.2 | 3 | 61.2 | 10 | 9.9 |
| Bacterial Diarrhea | - | - | - | - | - | - | - | - | - | - | 3 | 9.8 | - | - | - | - |
| Pathology | - | - | - | - | - | - | - | - | - | - | 1 | 2.9 | - | - | - | - |
| Clinical Research | - | - | - | - | - | - | - | - | - | - | 1 | 0.9 | - | - | - | - |
| Epidemiology | - | - | - | - | - | - | - | - | - | - | 5 | 7.1 | - | - | - | - |
| In Country / Third Country Training | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4 | 2.8 |
| Traditional Medicines | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Laboratory Animals | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| OI | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Immunology | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Total | 21 | 321.2 | 10 | 23.2 | 28 | 455.9 | 27 | 52.9 | 22 | 500.5 | 68 | 98.9 | 14 | 304.8 | 50 | 54.5 |

Prepared by the investigation team

**Annex 5.2.1 Dispatch of JICA Experts (2/2)**

| | Research and Control of Infectious and Parasitic Diseases Project | | | | Research and Control of Infectious Diseases Project | | | | International Parasite Control Project | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Long term | | Short term | | Long term | | Short term | | Long term | | Short term | | Long term | | Short term | |
| | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M |
| Leader | 2 | 21.2 | - | - | - | - | - | - | 1 | 28.4 | - | - | 8 | 939.6 | 2 | 0.4 |
| Coordinator | 3 | 24.6 | - | - | 1 | 37.0 | - | - | 1 | 22.4 | - | - | 12 | 2,089.1 | 1 | 4.2 |
| Virology | | - | - | - | - | - | - | - | - | - | - | - | 14 | 4,845.3 | 12 | 382.8 |
| Bacteriology | - | - | - | - | - | - | - | - | - | - | - | - | 11 | 2,721.1 | 29 | 779.1 |
| Parasitology | 1 | 18.0 | 3 | 1.2 | - | - | - | - | 3 | 50.8 | 2 | 1.0 | 18 | 4,374.3 | 30 | 484.7 |
| Equipment Maintenance | - | - | - | - | - | - | - | - | - | - | - | - | 0 | 0.0 | 2 | 1.6 |
| HIV／AIDS | 3 | 47.3 | 3 | 1.8 | 1 | 17.8 | 5 | 3.3 | - | - | - | - | 7 | 124.2 | 34 | 38.0 |
| Viral Hepatitis | 1 | 9.9 | 2 | 1.3 | 1 | 14.2 | 3 | 1.6 | - | - | - | - | 7 | 132.5 | 23 | 20.0 |
| Viral Diarrhea | - | - | - | - | - | - | - | - | - | - | - | - | 2 | 36.7 | 4 | 4.3 |
| ARI | - | - | - | - | - | - | - | - | - | - | - | - | 3 | 61.2 | 12 | 11.1 |
| Bacterial Diarrhea | - | - | - | - | - | - | - | - | - | - | - | - | 0 | 0.0 | 3 | 9.8 |
| Pathology | - | - | - | - | - | - | - | - | - | - | - | - | 0 | 0.0 | 1 | 2.9 |
| Clinical Research | - | - | - | - | - | - | - | - | - | - | - | - | 0 | 0.0 | 1 | 0.9 |
| Epidemiology | - | - | - | - | - | - | - | - | 1 | 24.0 | - | - | 1 | 24.0 | 5 | 7.1 |
| In-Country/Third Country Training | 2 | 19.4 | 2 | 1.5 | - | - | - | - | - | - | - | - | 2 | 19.4 | 6 | 4.4 |
| Traditional Medicines | - | - | 1 | 0.7 | - | - | 2 | 2.3 | - | - | - | - | 0 | 0.0 | 3 | 3.0 |
| Laboratory Animals | - | - | 1 | 1.0 | - | - | - | - | - | - | - | - | 0 | 0.0 | 1 | 1.0 |
| OI | 1 | 4.7 | 4 | 3.2 | 3 | 48.1 | 3 | 1.7 | - | - | - | - | 4 | 52.8 | 7 | 4.9 |
| Immunology | - | - | - | - | - | - | 2 | 0.4 | - | - | - | - | 0 | 0.0 | 2 | 0.4 |
| Total | 13 | 145.2 | 16 | 10.8 | 6 | 117.0 | 15 | 9.3 | 6 | 125.6 | 2 | 1.0 | 89 | 15,420.2 | 178 | 1,760.6 |

Prepared by the investigation team

**Annex 5.2.2 Counterpart Training in Japan**

| | Communicable Diseases Research and Control Project | | Project of the Kenya Medical Research Institute | | Project on Research and Control of Infectious Diseases | | Research and Control of Infectious Diseases Project Phase II | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M |
| Virology | 1 | 8.8 | 5 | 48.1 | 1 | 12.2 | 1 | 36.3 | 8 | 105.4 |
| Bacteriology | 2 | 23.9 | 4 | 31.1 | 2 | 14.4 | 1 | 4.9 | 9 | 74.3 |
| Immunology | 1 | 7.0 | - | - | 1 | 9.9 | - | - | 2 | 16.9 |
| Inspection | 4 | 2.0 | 1 | 0.6 | 3 | 3.9 | - | - | 8 | 6.5 |
| 消化器病 | - | - | 2 | 4.4 | - | 0.0 | - | - | 2 | 4.4 |
| Hospital Management | - | - | 1 | 0.5 | 2 | 2.9 | - | - | 3 | 3.4 |
| Parasitology | - | - | 4 | 38.9 | 2 | 23.6 | 2 | 11.8 | 8 | 74.3 |
| Equipment Management | - | - | 1 | 7.8 | 2 | 6.6 | 1 | 1.8 | 4 | 16.2 |
| Diagnosis | - | - | 1 | 0.5 | 1 | 4.5 | - | - | 2 | 5.0 |
| Hepatitis | - | - | 2 | 18.1 | 2 | 13.9 | 4 | 17.7 | 8 | 49.7 |
| Respiratory Diseases | - | - | - | - | 1 | 12.1 | 7 | 36.5 | 8 | 48.6 |
| Entomology | - | - | - | - | 1 | 10.1 | - | - | 1 | 10.1 |
| HIV/AIDS | - | - | - | - | - | - | 13 | 49.7 | 13 | 49.7 |
| Total | 8 | 41.7 | 21 | 150.0 | 18 | 114.1 | 29 | 158.7 | 76 | 464.5 |

Note: Data for the “Research and Control of Infectious and Parasitic Diseases Project”, “Research and Control of Infectious Diseases Project” and “International Parasite Control Project” is not included.

Prepared by the investigation team

**Annex 5.2.3 Budgets for the Programme**

| | Communicable Diseases Research and Control Project | | Project of the Kenya Medical Research Institute | | Project on Research and Control of Infectious Diseases | |
|---|---|---|---|---|---|---|
| JICA | | | | | | |
| Equipment | JP¥ | 193,000,000 | JP¥ | 268,300,000 | JP¥ | 409,047,000 |
| Operational costs | JP¥ | | JP¥ | 112,800,000 | JP¥ | |
| Total | JP¥ | 193,000,000 | JP¥ | 381,100,000 | JP¥ | 409,047,000 |
| KEMRI | | | | | | |
| Operational costs | | | Khs | 18,300,000 | Khs | 9,421,719 |

Note: Excluding personnel costs

1 US Dollar = 76.35 Kenyan Shilling (as of December 2003)

# 6 Analytical Findings on the University Teaching Hospital in Zambia

This chapter comprises four sections, and it presents an analysis of the contribution of the Virology Laboratory and TB Laboratory of the University Teaching Hospital (UTH) to the control of infectious diseases and the effects of JICA's cooperation that made possible the contribution of both laboratories. JICA's cooperation with both these laboratories of the UTH is summarized in Section 6.1. Section 6.2 gives an outline of infectious diseases control in Zambia, including the roles and functions of the Virology Laboratory and TB Laboratory of the UTH in this infectious diseases control. Based on the findings described in Sections 6.1 and 6.2, the effects of JICA's cooperation that enabled both laboratories to contribute to infectious diseases control are analysed in Section 6.3. The results of this analysis are summarized in Section 6.4 in terms of the expected role of both laboratories.

## 6.1 Summary of JICA Cooperation with the UTH

### 6.1.1 Background History to the Cooperation

The infant mortality rate of Zambia marked 141 deaths/1,000 live births in the middle of the 1970s, and this was one of the main issues in the health sector. In view of this situation, the Ministry of Health (MOH) of Zambia requested the establishment of a paediatric ward, and the School of Medicine, Zambia University requested the dispatch of experts for medical training when JICA conducted a needs survey in the health sector in Zambia. JICA accepted these requests, and started the University of Zambia Medical School Project with the aim of improving the available technology in the areas of neonatal care and paediatric surgery from 1980. In addition, a paediatric ward was constructed at the site of the University of Zambia through a grant aid project provided by Japan in 1983. When the University of Zambia Medical School Project was terminated in 1989, the importance of prevention, diagnosis, and care related to infectious diseases among infants was emphasized as a recommendation of the final evaluation of the project.

Consequently, the Government of the Republic of Zambia (GRZ) requested cooperation from the Japanese government to help establish infectious diseases control programmes following the end of the project mentioned above. In response to this request, after 1989, JICA designated the UTH as an implementing agency and launched three technical cooperation projects for infectious diseases control. The Virology Laboratory and the Tuberculosis (TB) Laboratory, which are part of the laboratory services department of the UTH, served as counterparts for these projects, and JICA conducted technical cooperation to establish the diagnostic capacity for infectious diseases control in Zambia.

Moreover, in order to develop the infrastructure for associated research activities, JICA constructed a building for the Virology Laboratory in 1991, and a building for TB Laboratory using the budget for project-type technical cooperation.

### 6.1.2 Outline of the UTH

#### (1) Mission of the UTH

The UTH is a university hospital that is in charge of implementing the three-year clinical course within the seven-year medical education curriculum that is implemented by the School of Medicine, Zambia University. It is the top referral hospital as well as the only teaching hospital in Zambia. The mission of UTH described in the "Action Plan and Budget of UTH" is "to provide affordable quality, health care, function as a referral centre; train health care providers; conduct research to find solutions to existing health problems and for the development of science".

#### (2) Organizational Structure of the UTH

The UTH functions as a general hospital and as a teaching hospital and it is managed and operated by both the Ministry of Education (MOE) and Ministry of Health (MOH). As a general hospital, it has 14 wards including ones for internal medicine and surgery. There are four departments under the supervision of the managing director – the department of clinical services, department of laboratory services, department of nursing, and department of finance. The head of clinical services is also the deputy managing director of the hospital, who is responsible for the entire department of clinical services.

The department of laboratory services is in charge of six laboratories, including the virology laboratory, which is the JICA project counterpart, the microbiology laboratory, the clinical pathology laboratory, the haematology laboratory and the histopathology laboratory. The TB laboratory, which is another JICA counterpart, is a unit of the microbiology laboratory. The organizational chart of the UTH is shown in Figure 6.1.

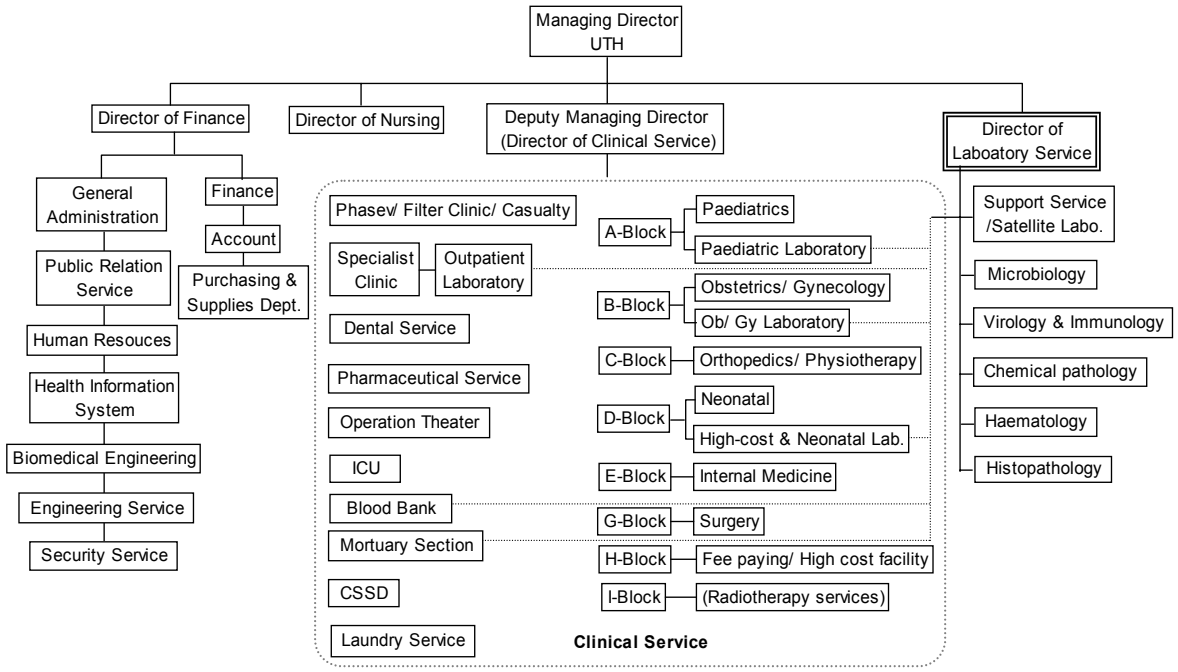
These laboratories serve as public health laboratories for the country and participate in various programmes implemented by the Department of Public Health and Research of the Central Board of Health (CBoH)[1]. Those involved in the research activities of the UTH laboratories are consulted every two weeks through a special committee composed of representatives of the CBoH, School of Medicine, Zambia University, the managing director and deputy managing director of the UTH, and two representatives of the MOH.

On the other hand, the UTH itself is managed by an executive committee chaired by the managing director. The director of each department appoints the other members of the executive committee.

The laboratory management committee, chaired by the Directors of Microbiology and Pathology, is in charge of all of the laboratories. The laboratory management committee consists of representatives from each laboratory and each unit under the microbiology laboratory. Problems related to the laboratories are communicated to the executive committee where final decisions are made via the laboratory management committee. The organizational chart is shown in Figure 6.1

1 In July 2004, it was announced that the CBoH would be dissolved and integrated into the MOH. However, as of March 2005, although its governing body had been dissolved, the CBoH was continuing with the operation of health care services.

**Figure 6.1 Organizational Chart of the UTH**




Prepared by the investigation team

### 6.1.3 Outline of JICA's Cooperation with the UTH

#### (1) Objectives and Components of JICA's Cooperation

JICA's cooperation with the UTH for infectious diseases control began with the Infectious Diseases Project (1989 to 1995). JICA implemented three technical cooperation projects and the UTH was designated as the project implementing counterpart for the Zambian side until July 2004 when this evaluation study was conducted.

A series of cooperation activities was aimed at establishing the diagnostic capacity for infectious diseases control in Zambia. They were focused on the establishment and capacity building of the virology laboratory of the UTH in the initial stage of this cooperation. After the virology laboratory acquired the necessary technology and facilities, the targets of cooperation were extended nationwide through the participation of the EPI Programme, Polio Eradication Programme, and HIV sentinel survey. As a result of an evaluation of the Infectious Diseases Control Project, JICA judged that the Virology Laboratory and TB Laboratory had already acquired the diagnostic technology for the target diseases in the initial stage of the cooperation, namely, for diarrhoea, ARI, Hepatitis, polio, and measles. Thus, since 2001, JICA has focused the targets of cooperation on HIV/AIDS and TB, which have become the foremost public health problem in Zambia.

Unlike the cooperation projects in Ghana and Kenya, the buildings of the virology and TB laboratory were not constructed through the grant aid scheme, but by using the budget for project-type technical cooperation.

In this evaluation study, projects were evaluated as a package of cooperation measures concerning infectious diseases control that were implemented after 1989. (see Table 6.1).

**Table 6.1 Target Projects for the Evaluation**

| Project title | Scheme | Execution period (fiscal years) |
|---|---|---|
| Infectious Diseases Project Phase I and F/U | TCP | 1989.4～1995.3 |
| Infectious Diseases Control Project | TCP | 1995.4～2000.3 |
| Dispatch of individual experts (two person) | Individual experts | 2000.4～2001.3 |
| HIV/AIDS and TB Control Project | TCP | 2001.3～2006.3 |

Prepared by the investigation team

The components of JICA's cooperation are summarised in Table 6.2.

**Table 6.2 Components of JICA's Technical Cooperation with the UTH**

| | 89 | 90 | 95 | 00 | 05 |
|---|---|---|---|---|---|
| Main changes in the health sector in Zambia | | ▲Health Reform starts<br>National Health Strategic Plan ▲ is started<br>User fee system is introduced ▲<br>National AIDS/STD, TB and leprosy ▲ control programme is drawn up | CBoH is established ▲<br>Japan-USAID Cooperation is started ▲<br>VCT is started ▲ | National Measles Immunization Campaign ▲<br>NAC is established ▲<br>ART is started ▲ | |
| JICA Technical Cooperation Projects | | Infectious Diseases Project Phase Ⅰ・F/U<br>➢ Establishment of the diagnostic methods for infectious diseases in the laboratory<br>➢ Nosogenesis analysis from patient samples<br>➢ Standardization of the treatments for infectious diseases | Infectious Diseases Control Project<br>➢ Improvement of the diagnostic methods<br>➢ Epidemiological and clinical research involving inpatients and communities<br>➢ Strengthening surveillance in infectious diseases control<br>➢ Improvement of the diagnostic techniques in rural hospitals<br>➢ Effective use of research outputs through the project | HIV/AIDS and TB Control Project<br>➢ Improvement of diagnosis quality, data management and laboratory management<br>➢ Introduction of diagnostic and surveillance techniques for HIV/AIDS and TB to rural hospitals<br>➢ Promotion of diagnostic methods among laboratory technicians in rural hospitals<br>➢ Effective use of HIV/AIDS and TB information through projects in a national programme<br>➢ Establishment of a network with working groups | |
| Expenditures from JICA Technical Cooperation | | Establishment of Virology Lab. → | Establishment of TB Lab. → | | |
| Objectives of the JICA Programme | | Establishment of the Diagnostics Capacity of the Virology Laboratory at the UTH | Expand the targets to other health facilities | | |
| Role of the UTH in the country/ Africa region. | | Teaching hospital<br>National Reference▲ Laboratory (HIV) | WHO National Reference▲ Laboratory (influenza)<br>Joint research with ▲ international institutes<br>WHO Inter-countries Reference Laboratory (polio)▲ | ▲WHO National Reference Laboratory (measles) | |

Prepared by the investigation team

## (2) Components of the JICA Cooperation by Diseases

As shown in Table 6.2, each project targeted several diseases, and research was carried out on specific diseases of which outbreaks occurred during the period covered by several projects. In consideration of this situation, project activities were rearranged on the basis of the incidence or occurrence of the diseases.

A series of JICA technical cooperation activities targeted Viral Diarrhoea, Acute Respiratory Infections (ARI), Hepatitis, Polioviruses and other Enteroviruses, Measles, HIV/AIDS, and TB. The components of this JICA technical cooperation are summarized below (the activities of each project, inputs by JICA, such as the dispatch of experts, and C/P training and equipment provision are given in the Annexes).

### 1) Polioviruses and other Enteroviruses

The World Health Organization (WHO) set the year 2000 as the target for the global eradication of poliomyelitis. The most important elements for meeting this challenge are increasing the vaccine coverage and improving the surveillance capacity for precisely assessing the epidemiological status of poliomyelitis.

The virology laboratory at the UTH conducted studies on the polio antibody ratio among elementary school children and antibody formation stemming from OPV inoculations and strengthened the surveillance system for polio. As a member of the WHOAFRO polio laboratory network, the laboratory also conducted diagnoses of Acute Flaccid Paralysis (AFP) samples sent from Zambia and Tanzania between 1993 and 2000.

The Virology Laboratory was designated as a polio inter-country reference laboratory by the WHO and polio surveillance activities became an important task of the virology laboratory even after polio activities conducted through JICA's cooperation ended in 2000.

### 2) Measles

There were cyclical epidemics of measles every two to three years, although the vaccine coverage for measles was about 60% between 1986 and 1983 in the Lusaka Urban area. Therefore, the Virology Laboratory at the UTH clarified and accumulated epidemiological information on measles to solve this problem through a series of studies. It was confirmed through a hospital-based survey between 1992 and 1995 that many children were exposed to measles before the vaccination age (9 months in Zambia). This result suggested that the age of vaccination for infants was inappropriate.

In addition, about one third of measles cases during this period had been vaccinated, which also suggested a low vaccine efficacy in this population.

### 3) HIV/AIDS

Zambia has one of the highest HIV infection rates in the world. Consequently, HIV/AIDS greatly threatens the nation's development. From 1985, when the first AIDS patient was reported in Zambia, the number of AIDS patients increased to 3,155

and the number of HIV infected people grew to 12,815 by June 1990. In addition, the proportion of HIV patients hospitalized at the UTH rose from 10 percent in 1986 to 1987 to 30 percent in 1990, and measures to cope with the situation became urgent. HIV/AIDS-related activities, especially improved diagnostic technology and services were provided from 1989 through JICA cooperation. Initially, the Virology Laboratory at the UTH implemented training activities for laboratory technicians and later contributed to the organization of the HIV Sentinel survey, its implementation, and quality assurance (QA) of the test results. The Virology Laboratory was designated as a national reference laboratory in 1992.

In 1999, the GRZ started Voluntary Counselling and Testing (VCT), which was implemented in 46 locations throughout the nation in 2001, but this was increased to 101 locations by mid-2003 and to 176 locations as of April 2004. The Virology Laboratory at the UTH also provided guidance to the staff of the VCT programme and for HIV counsellors. The Virology Laboratory is also trying to implement the Dynabean method, an inexpensive CD4 count method, in all provincial hospitals in Zambia.

### 4) TB

In Zambia, short-programme chemotherapy for tubercular patients was introduced in 1982. As a consequence, treating patients over a short period was made possible and the number of outbreaks has decreased.

However, TB, which is an opportunistic infectious disease, has been increasing with the spread of HIV since 1985. The TB laboratory was therefore established and research on TB was started as a part of JICA's cooperation from 1989. Techniques for the identification of TB, and sputum culture were transferred as a part of infectious diseases surveillance in the initial stage. Research on a drug-resistant bacterium became the main activity after 2001. In addition, human resources development, such as the retraining of laboratory technicians, and quality assurance in the rural microscopy centres were executed.

### 5) Viral Diarrhoea

There was previously little knowledge available on the distribution and aetiology of viral diarrhoea in Zambia, although diarrhoea is one of leading causes of morbidity and mortality in children. The Virology Laboratory therefore conducted a series of studies on viral diarrhoea from 1989 to 2000 in cooperation with JICA.

The diarrhoea pathogens and seasonal fluctuations in rotaviruses were elucidated through the aetiological and epidemiological studies on rotaviral diarrhoea in the UTH and Urban Health Clinics in Lusaka. Studies on the association between rotaviruses and HIV in children with acute diarrhoea were also conducted, although no significant difference in the positive rate for rotaviruses was confirmed between HIV positive and negative children with acute diarrhoea.

### 6) ARI

Of the patients hospitalized in the UTH general paediatrics ward in 1988, 30 to 50% suffered from upper respiratory infections. However, no study on viral respiratory infections was conducted due to the lack of virology-related diagnostic facilities in Zambia. When the Virology Laboratory was built through the infectious diseases project in 1992 research on viral respiratory infectious diseases began.

As a result of this research, routine diagnostic techniques for virus isolation using microplates was established, and Influenza Virus A and B infections were identified in Zambia for the first time. Studies on the Respiratory Syncytial Virus (RSV) were also conducted during this period. These research activities were continued until 2000.

### 7) Hepatitis

According to the blood bank in Zambia, about 10% of blood donors were classified as carriers of Hepatitis B in the early 1990s, although information on hepatitis was very limited during this period. Thus, the Virology Laboratory at the UTH conducted research on hepatitis to assess the current status of hepatitis in Zambia during the 1989 – 2000 period. In particular, the research focused on Hepatitis B, and the importance of horizontal transmission control among hospitalized children was recognized through this research. The Virology Laboratory at the UTH also established the serum diagnostic techniques for the hepatitis virus as part of this research.

## 6.2 Outline of Communicable Diseases Control in Zambia

An outline of infectious diseases control in Zambia is summarised as follows to clarify the roles and functions of the Virology Laboratory and the TB Laboratory as research institutions for infectious diseases control in Zambia.

### 6.2.1 Disease Structure

A breakdown of the disease load in terms of the number of health clinic outpatients in 1999 showed that malaria was at the top of the list, followed by ARI and diarrhoea. However, data on HIV/AIDS and TB was not included in these statistics due to the unreliability of the data.

Currently, the foremost public health problem is HIV/AIDS. As explained earlier, the rapid increase in the number of HIV/AIDS patients has contributed to the drop in the average life expectancy from 55 years in 1980 to 33 years in 2004. In addition, in conjunction with the HIV/AIDS epidemic, opportunistic TB infection has also increased. According to the CBoH, the reported ratio of new tuberculosis patients was an average of about 100 (87.7 to 127.6) per 100,000 people from 1964 to 1984, but after 1985, when the first HIV/AIDS patient was reported, the reported ratio of new TB patients rapidly increased and rose to 409 cases in 1996. The number of reported TB patients in 1996 was 38,863. Although data after this period does not exist, the MOH has projected that the number of cases will reach 50,000 by 2005.

According to the 2002 health statistics of the CBoH, the prevalence and morbidity rates for malaria were the highest among those for infectious diseases. Moreover, it is estimated the infant mortality rate for children under five years of age due to malaria in Zambia was nearly 40% and the mortality rate for pregnant women was about 20%. According to a 2001 UNICEF report, nearly 42 percent of all children under five years of age suffered from acute malnutrition and ARI. In recent years, cholera and measles epidemics and a high MMR have also become serious problems. Major causes of death stemmed from complications during the perinatal period (26%), puerperal fever (25%), and septic fever after delivery (26%).

### 6.2.2 Communicable Diseases Control by the MOH

#### (1) Development Plans in the Health Sector

The PRSP, which was approved in April 2002, gives priority to seven programmes, including the Basic Health Package, which aims to provide exemption from user fees for public health services to vulnerable groups, improve access to health care, and raise standards of public health. The elements of these public health priorities are in line with the National Health Strategic plan (2001-2005).

Within the Zambian context, health sector reform is being sustained to improve the efficiency, equity and effectiveness of the health sector, so the National Health Strategic Plan 2001-2005 has designed a 5-year plan with 19 strategic objectives. Public Health Priorities, of which concern for infectious diseases control is one of objectives, are described within the framework of an integrated approach to health care, as shown in Table 6.3.

**Table 6.3 Public Health Priorities in the National Health Strategic Plan**

| Diseases/Health conditions | Approach |
|---|---|
| Malaria | Provision of insecticide-treated mosquito nets according to the "Roll Back Malaria" initiative and the improvement of techniques for malaria diagnosis for medical worker (refer to the following "National Roll Back Malaria Strategy") |
| HIV/AIDS, TB and STI | Activities of the "National HIV/AIDS/STI/TB Intervention Strategic Plan" such as a prevention strategy, support treatment and care, support for patients (refer to the following "National HIV/AIDS/STI/TB Intervention Strategic Plan") |
| Integrated reproductive health | Including family planning, safe motherhood, adolescent health, abortion and post-abortion care, infertility and (sexual) violence against women |
| Child health: | Aims at reducing morbidity and mortality due to childhood diseases |
| Mental and oral health | Creating the appropriate framework and mechanisms for strengthening mental and oral health activities and programmes |
| Epidemics | Improved public health surveillance and the control of epidemics. |
| Hygiene, sanitation and safe water | Promotion of personal hygiene, proper refuse disposal and access to safe water and the implementation of other critical aspects of environmental health as will be elaborated in the National Environmental Health Policy |

Source: Ministry of Health (2002), National Health Strategic Plan 2001-2005

### (2) Implementation System for Communicable Diseases Control

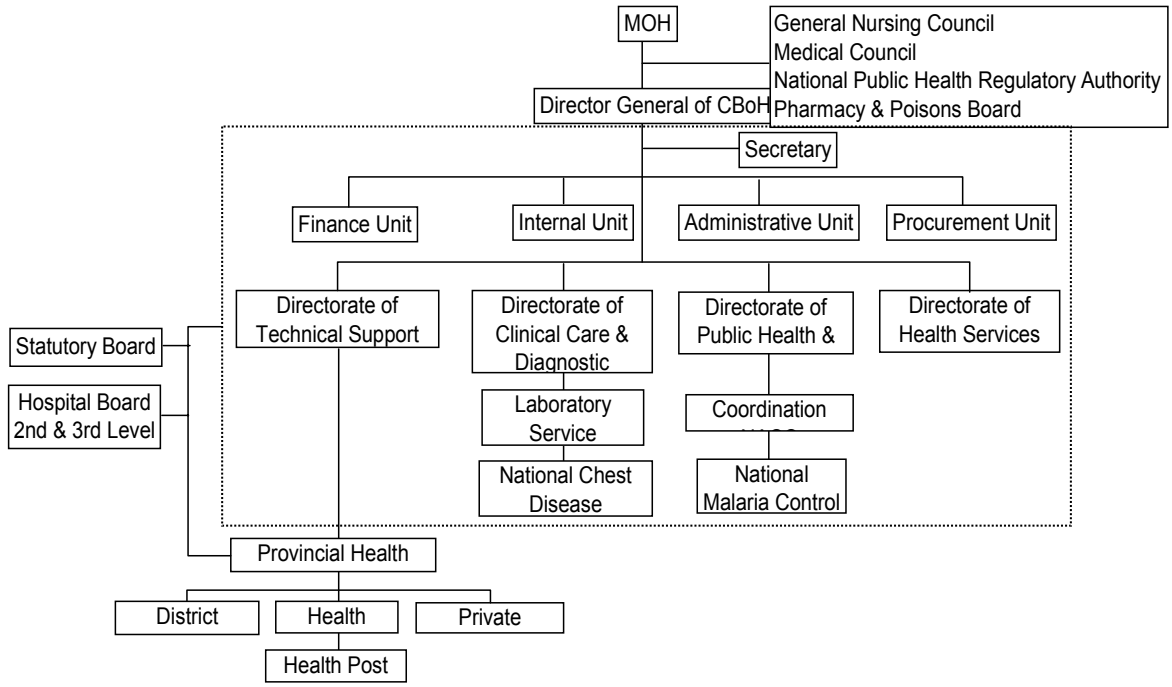
The role and structure of the MOH has changed in line with the National Health Services Act of 1995. The administration of the health system has been divided into four main groups of institutions, the MOH, the CBoH, the District Health Boards (DHB), and the Hospital Management Boards (HMB). The MOH is the policy-making body for the health sector, while the CBoH is the national administrative and health policy implementation unit. The CBoH is responsible for the overall technical management of the services that will implement and operate government health policies. The CBoH is responsible for the provision of health services through autonomous management boards at the district, second and third referral hospital levels.

The headquarters of the CBoH operates as the national coordinator of health services delivery with four technical directorates (see Figure 6.2):

- Directorate of Technical Support Services: responsible for conducting performance audits of the health boards, monitoring and providing technical support for services provision, and capacity building of the health boards
- Directorate of Clinical Care and Diagnostic Services: responsible for planning, monitoring, and evaluating the provision of diagnostic and pharmaceutical services
- Directorate of Public Health and Research: responsible for developing guidelines on epidemiology, environmental health, health promotion, and mental health, for developing and maintaining the HMIS, and for facilitating research on all health activities
- Directorate of Health Services Planning: responsible for the planning and contracting of health services, providing financial management, developing

partnerships in health, and providing national level human resources planning and training

**Figure 6.2 Organizational Chart of the CBoH**




Source: Ministry of Health (2000), National Health Strategic Plan 2001-2005

The HMB has responsibility for the management of the second and third level hospitals in Zambia. Each DHB organizes District Health Management Teams consisting of medical experts for all 72 provinces in Zambia, and supervises institutions for primary health care services delivery. The DHB also has facilities where the community health workers and traditional birth attendants work.

In line with the promotion of decentralization as a part of health sector reform, the DHBs have their own budgets. Regarding the implementation of infectious diseases control programmes, such as the "National HIV/AIDS/STI/TB Intervention Strategic Plan", the DHB in each province prepares an individual programme or project in line with the national programme through close communication with the CBoH, and implements its own programme or project.

### (3) National Communicable Diseases Control

#### 1) Malaria Control

The GRZ has prepared the National Strategic Plan for Roll Back Malaria based on the "Roll Back Malaria" initiative that was adopted by WHO in 1998. The overall goal of the national Roll Back Malaria strategy is to reduce malaria morbidity and mortality in Zambia to 50% of current rates by 2010.

This strategy comprises seven main strategic elements, such as program management and health system development, insecticide treated nets (ITN), and case management. The direction of these strategies is towards a comprehensive approach involving medical workers, the private sector and communities for prevention using ITN, the monitoring and case management of anti-malarial drugs, and IEC (Information, education and communication) activities.

- Program Management and Health System Development: focus on strengthening the delivery systems at the district level
- Insecticide Treated Nets: distribution of insecticide treated nets to the extent possible through existing systems and resources
- Case Management: ensure the availability of effective anti-malarial drugs and improvement of health workers skills in the management and diagnosis of malaria
- Targeted Vector Control and Epidemic Preparedness: effectively implement a framework for the IRS and district rapid response teams in place
- IEC: increase community health seeking behaviour and empower health providers to ensure the effective implementation of health promotion
- Monitoring and Evaluation and Surveillance: improve malaria information systems in the target districts
- Research: apply improvement plans to other regions as a result of research in the target districts

**2) HIV/AIDS Control**

In 2002, Zambia declared HIV/AIDS as a national disaster, and established the National Aids Council (NAC) as the highest national body with the authority to coordinate a national response to HIV/AIDS/STD/TB. The mandate of the NAC is to coordinate, monitor and evaluate inputs, activities, outputs and impacts of HIV/AIDS programmes.

The National HIV/AIDS/STI/TB Intervention Strategic Plan (NAISP) (2002-2005) has been developed through a participatory and highly consultative process, involving the Secretariat of the NAC, NGO stakeholders, representatives of the CBoH and government ministries as well as cooperating development assistance partners. The main strategic targets under the NAISP are: 1) to reduce HIV/AIDS prevalence in the 15-19 age group through the implementation of communication campaigns for changes in multi-scrotal behaviour , 2) to decrease the MTCT rate of HIV by increasing access to quality presentations on MTCT services, 3) to make all blood, blood products and body parts safe for transfusion and to promote the use of sterile syringes, blades, and needles by strengthening all screening centers and adopting infectious control measures, 4) to improve the quality of life of HIV/AIDS infected persons, 5) to provide appropriate care, support and treatment for HIV/AIDS infected persons, and 6) to provide improved care and support services for orphans and vulnerable children.

The objectives and actions under the NAISP are shown in Table 6.4.

**Table 6.4 Objectives and Actions under the NAISP**

| Objective | Action |
|---|---|
| Prevention and control | Information, Education and Communication, Life Skills, Voluntary Counselling and Testing, Barrier methods and Condoms, Provision of Safe Blood Transfusion Services, Treatment of STIs, Prevention of Mother to Child Transmission |
| Treatment, Care and Support | Treatment of Opportunistic Infections and STIs, Access to Anti-Retroviral Drugs, Availability of Traditional/Alternative Remedies, Provision of appropriate Nutrition |
| Support for the affected and infected | Continuum of care for PWA, Strengthen Home Based Care, Orphan care, Caring for Care Providers |
| High risk and vulnerable groups | Poverty Reduction, Aid to high risk groups: commercial sex workers, prisoners, refugees, truckers, fish traders, etc. |
| Human Rights, Stigma, Discrimination and Ethical Issues | HIV Testing, Partner Notification, Stigma and Discrimination, Persons with varying physical or cognitive abilities, Awareness education for Children and Young People, Prevention of the Willful Transmission of HIV |
| Gender | |
| Research and Development | Research, Vaccine Development |
| Monitoring and Evaluation | |

Source: National HIV / AIDS / STI / TB council (2003), National HIV / AIDS / STI / TB Intervention Strategic Plan 2002-2005

Zambia has received $US1.96 billion from the Global Fund against Tuberculosis, Malaria and HIV/AIDS for a period of five years to help infectious diseases control against HIV/AIDS and malaria. It has also received financial assistance from PEPFER and the Zambia National Response to HIV/AIDS Project (ZANARA). NAISP is implemented through the use of these budgetary resources to support the focus on HIV/AIDS.

### 3) TB Control

TB has been a major public health problem for Zambia since it became independent in 1964. It has spread throughout the country, especially among the young and economically productive adults. The National Tuberculosis Control Program (NTP) was initially established in 1964 and was based on the provision of anti-tuberculosis drugs.

The problem of TB has been worsened by the HIV/AIDS pandemic in Zambia since 1985. Thus, the MOH has strengthened the NTP through the unification of the TB Working Group and Leprosy Working Group in 1999 to serve as an advisory body to the MOH on matters pertaining to TB and leprosy control activities. In conformity with the NTP, the following are the key interventions;

Technical Support: It is vital that technical assistance at all levels ensures that TB control activities are adequately carried out. A TB/Leprosy Control Officer at the CBoH will coordinate activities at the central level, providing technical assistance to the provincial level. A similar structure is required at the provincial level. The integration of functions can occur at the district level up to the health centre level as long as the provincial level can provide the needed technical support and supervision and training with assistance from the CBoH.

- Capacity Building: A clear system for training all cadres of health staff in the principles of tuberculosis control with the development of curricula and training modules to meet the need or demand
- Diagnosis: The provision of a network of smear microscopy services in all areas should be improved through the quality of diagnosis. The provision of quality control through the Central Reference Laboratory (CRL) and a programme of training will ensure high quality diagnostic services
- Case Detection: Education of health staff on the signs and symptoms of TB to improve the ability to correctly recognize suspected TB patients and leading to the initiation of correct diagnostic procedures and improved diagnosis of TB.
- Drugs and Supplies: Ensure an uninterrupted supply of drugs and laboratory supplies with adequate buffer stocks at the Central and District level by assuring the availability of funds allocated for the purchase of these drugs and supplies. The cycle for the ordering of drugs should be cognizant of the long lead times required within the context of the International Tender System.
- Information System: In order to ensure the capacity to conduct a proper analysis of the status of TB treatment and its outcomes, the Health Management Information System (HMIS) should be updated to include additional parameters for TB management indices.
- Reduction of Stigmas: The production and dissemination of appropriate messages regarding TB, its treatment and its relationship to HIV in order to reduce the social stigma attached to contracting TB. Any reduction in such stigmas will improve the health seeking behaviour or attitude of suspected TB patients, thereby increasing the identification of passive cases
- Collaboration with Community-Based Organizations: Ensure effective collaboration with community-based organizations (CBO) in order to ensure the achievement of widespread DOTS coverage within the context of an uninterrupted supply of TB drugs.
- Private Sector: Provide an environment through which effective collaboration can be established between the public and private sector for the provision of quality TB care.

**4) Implementing Structure for Research on Infectious Diseases**

Table 6.5 lists three other research institutes for infectious diseases control under the jurisdiction of the MOH.

**Table 6.5 Implementing Structure for Research on Communicable Diseases**

| Organization | Outline |
|---|---|
| Tropical Diseases Research Center (TDRC) | TDRC was initiated by WHO in collaboration with the GRZ. In 1981, TDRC became a National Institution for research, training, and services in diseases of public health importance in Zambia. To this effect, TDRC became the first and foremost national resource dedicated to priority health problems in Zambia and a facility for the training of national and regional health service personnel. It is a statutory body under the MOH with the mandate to conduct epidemiological and clinical research. Activities of the TDRC include epidemiological and clinical research on malaria, schistosomiasis, African trypanosomiasis, HIV/AIDS, micronutrient deficiencies, health systems research, health impacts, health project implementation and policy evaluation, training and services. |
| Chest Diseases Laboratory (CDL) | The CDL has been established as the national reference laboratory for TB. The CDL conducts routine activities and research on mycobacteriology services such as smears, cultivation, drug sensitivity testing and national quality control services for smear tests.<br>In 2003, the CDC upgraded its facilities and equipment for the CDL and provincial/ district microscopy centers using a grant (US$1 million) to improve TB treatment and monitoring. |
| National Malaria Control Center (NMCC) | NMCC is a research centre that is managed by the Malaria Secretariat of the Directorate of Public Health and Research of the CBoH. NMCC conducts collaborative research with foreign institutes such as WHO, UNICEF, USAID NGOs, and universities (CDC, Boston University, etc) to realise the Roll Back Initiative for Malaria. |

Prepared by the investigation team

The Virology Laboratory of the UTH has been designated as an inter-country reference centre for polio and a national reference laboratory for HIV/AIDS, influenza, and measles. The TB Laboratory of the UHT is an executing agency for external quality assurance (EQA) for the TB microscopy centres in Lusaka Province. The TDRC (HIV reference laboratory) and the CDL (a national reference laboratory for tuberculosis) have the same role as the Virology and TB Laboratories of the UTH. However, in the case of HIV, the Virology Laboratory is in charge of the northern region and the TDRC is in charge of the southern region. The TB Laboratory of the UHT has also been designated as a support institution for the CDL, and both laboratories have complemented their respective roles in TB control.

### 6.2.3 Assistance provided for Communicable Diseases Control by Other Donors

#### (1) Type of Assistance

SWAp was introduced into the health sector in Zambia with the formulation of the National Health Policies and Strategies: Health Reform by the MOH in 1992. The health sector basket funds consist of the District Basket Fund (DHB), which was started in 1994, and the Hospital Basket Fund, which was started in 2003. The DHB was used as an operating fund for health services (primary health services) and the Hospital Basket Fund was used as an operating fund for the second and third level hospitals.

In 1999, the Memorandum of Understanding (MOU), which stipulated a shared sector programme, was signed between Zambia and other donor countries, except for Japan. The bilateral donor signatories were the Netherlands, DANIDA, DFID, GTZ, Irish

Aid, SIDA, USAID, and the EU and the international institutions were UNICEF, UNFPA, UNDP, WFP, WHO, UNAIDS, and the World Bank. The MOU is not legally binding and there is no mandatory funding. As of 2004 to the present, the only donors who have officially participated in the SWAp, while contributing funds, are DANIDA, SIDA, DFID, the Netherlands, and the EU. Participating donors hold an annual consultative meeting (once a year), a health sector committee meeting (biannually), and a MOH/CP policy consultative meeting (monthly). The MOH/CP policy consultative meetings are held between the MOH and donor agencies to hold policy level discussions. The health sector committee meetings are held to review each basket fund accounting report and to approve expenditures. The annual consultative meeting is the highest level donor meeting where an activity report on the entire health sector and the fiscal year activity report are approved. In addition, the Monitoring and Evaluation Sub-committee, consisting of the Netherlands, Sweden, Ireland, Japan, UNICEF, and the Statistics Bureau of MOH, hold weekly meetings.

Japan, Canada and Norway are allowed to participate in the donor meeting, are given the floor, and are also provided information related to donor coordination. The JICA Zambia Office explained that bilateral cooperation implemented by Japan has not been influenced by the promotion of the SWAp. However, official development assistance is expanding based on the SWAp, and as a non-participating donor, the activities of Japan are not described in the annual action plan prepared by the MOH. Thus, the visibility of Japan is also limited in the aforementioned donor meetings.

### (2) Contents of Development Assistance

By pooling their development funds in a common basket fund, each donor has supported the national health strategy plan, while implementing a project approach in specific areas. In March 2004, general core donor groups centred on the DfID were created for each major health sector issue and a framework based on coordinated and effective assistance between donors was established. In the area of infectious diseases: the World Bank, the Netherlands, WHO, UNAID, and JICA were designated as members of the donor group for HIV/AIDS; USAID, WHO, and JICA as members of the donor group for TB; and USAID and WHO as members of the donor group for malaria. The major types of assistance and the major issues addressed by each donor are shown below (see Table 6.6).

**Table 6.6 Main Programmes of Donor Agencies (2003)**

| Organization | SWAp | Chaired subject | Programme |
|---|---|---|---|
| DFID | ○ | SWAp | Health reform<br>Health and education programmes<br>Strengthening the quality of life project<br>HIV/AIDS programmes |
| Embassy of Netherlands | ○ | HIV/AIDS<br>Monitoring and Evaluation<br>Resource provision | National drug policy<br>Strengthening district health programmes<br>Strengthening district hospital programmes |
| DANIDA | ○ | Procurement | Strengthening district health programmes<br>Strengthening district hospital programmes |
| EU | ○ | Procurement<br>Monitoring and Evaluation<br>Resource provision | Strengthening district health programmes<br>Strengthening district hospital programmes |
| SIDA | ○ | Human resources development<br>Resources provision | Health reform<br>Strengthening district health programmes<br>Strengthening district hospital programmes |
| World Bank | ○ | HIV/AIDS | HIV/AIDS support programme (ZANARA) |
| WHO | | HIV/AIDS<br>Monitoring and Evaluation<br>Child Health<br>Tuberculosis<br>Malaria | Child health programmes<br>Strengthening district health programmes<br>EPI/NID, vaccination programmes |
| UNICEF | | Child Health | EPI/NID, vaccination programmes<br>IMCI（PMTCT）<br>PHC programmes |
| UNFPA | | Reproductive Health | PMTCT for HIV/AIDS |
| UNAIDS | | HIV/AIDS | Coordination of National HIV/AIDS programmes |
| USAID | | Reproductive Health<br>Child Health<br>Tuberculosis<br>Malaria | National HIV/AIDS programmes<br>HIV/AIDS support through PEPFER |

Prepared by the investigation team

### 6.2.4 Position and Roles of the Virology Laboratory and the TB Laboratory of the UTH in Communicable Diseases Control

All laboratories at the UTH serve as public health laboratories for the country, and the research activities of the UTH laboratories are consulted every two weeks through the special committee composed of the representative of the CBoH, School of Medicine, Zambia University, the managing director and deputy managing director of the UTH, and two representatives of the MOH. The activities of the Virology and TB Laboratories are also judged by the special committee, thus they are in line with the policies of the GRZ.

The Virology Laboratory of the UTH has been designated as an inter-country reference site for polio and a national reference laboratory for HIV/AIDS, influenza, and measles. The Virology Laboratory also participates in the disease surveillance programmes implemented by the CBoH. The TB Laboratory of the UHT is an executing agency for external quality assurance (EQA) of the TB microscopy centres in Lusaka Province.

The positions of both laboratories regarding control of the main diseases are as follows.

**(1) HIV/AIDS**

As aforementioned, the Virology Laboratory of the UTH has been designated as a national reference laboratory for HIV/AIDS, and it conducts training for technologists of the sentinel survey implemented by the CBoH and EQA for HIV testing. As mentioned above, there are two national reference laboratories for HIV/AIDS in Zambia, namely the Virology Laboratory of the UTH and TDRC. Both these national reference laboratories have demarcated their area of operations; the Virology Laboratory is in charge of the northern region while the TDRC is in charge of the southern region. The Virology Laboratory also trains personnel in HIV testing and disseminates inexpensive the CD4 counting method for technologists in provincial hospitals and VCT programmes.

All of these activities by the Virology Laboratory are implemented based on JICA's cooperation.

**(2) TB**

The TB Laboratory of the UHT has been designated as a support institution for the national reference laboratory for TB (CDL), and is also designated as an executing agency of the EQA for 22 TB microscopy centres in Lusaka Province. All of these activities of the TB Laboratory are implemented based on JICA's cooperation.

The major tasks of the Virology and TB Laboratories at the UHT are testing and diagnostics training for medical personnel and university students, surveillance, and research. According to the head of the Virology Laboratory, testing and diagnostics are given the highest priority, then training, surveillance and research. Although research is given the lowest priority among the major tasks, the Virology Laboratory has conducted continuous collaborative research on EPI-related diseases, HIV/AIDS, TB, etc., with foreign institutes.

The UTH provides educational services such as 3-year clinical training for undergraduate and post-graduate students as a teaching hospital affiliated with the university. Both laboratories of the UTH also provide educational services for these students. As for retraining for medical personnel, the Virology Laboratory holds training courses on HIV diagnosis for VCT and PMTCT centres. In addition, the laboratory holds short-term training courses based on requests from the organization concerned. For instance, HIV diagnosis training courses were held for health workers in the Defence Force three times, in September and October 2003, and August 2004.

The Virology Laboratory provides diagnostic services and also epidemiological information on infectious diseases nationally and internationally as the WHO inter-country reference laboratory for poliomyelitis, and the national reference laboratory for HIV/AIDS, influenza and measles. The TB Laboratory also conducts external quality control for microscopy centers in Lusaka Province.

The roles of the Virology and TB Laboratories in infectious diseases control are shown in Table 6.7.

**Table 6.7 Roles of the Virology and TB Laboratories in Communicable Diseases Control**

| Main Role | Activities |
|---|---|
| Research | Research and diagnosis on Viral Diarrhoea, Polio, Measles, ARI, Hepatitis, HIV/AIDS, and TB |
| Human Resources Development | Training and education for medical personnel, undergraduate and post-graduate students |
| Health Services | Information services such as a reference laboratory, external quality assurance for TB microscopy, dispatching staff to national response systems in relation to emerging and re-emerging infectious diseases, technical advice for health programmes and committees |

Prepared by the investigation team

JICA's cooperation covers all diseases targeted by both the Virology and TB Laboratories.

### 6.2.5 Relationship between the Virology and TB Laboratories and Other Organizations Involved in Communicable Diseases Control

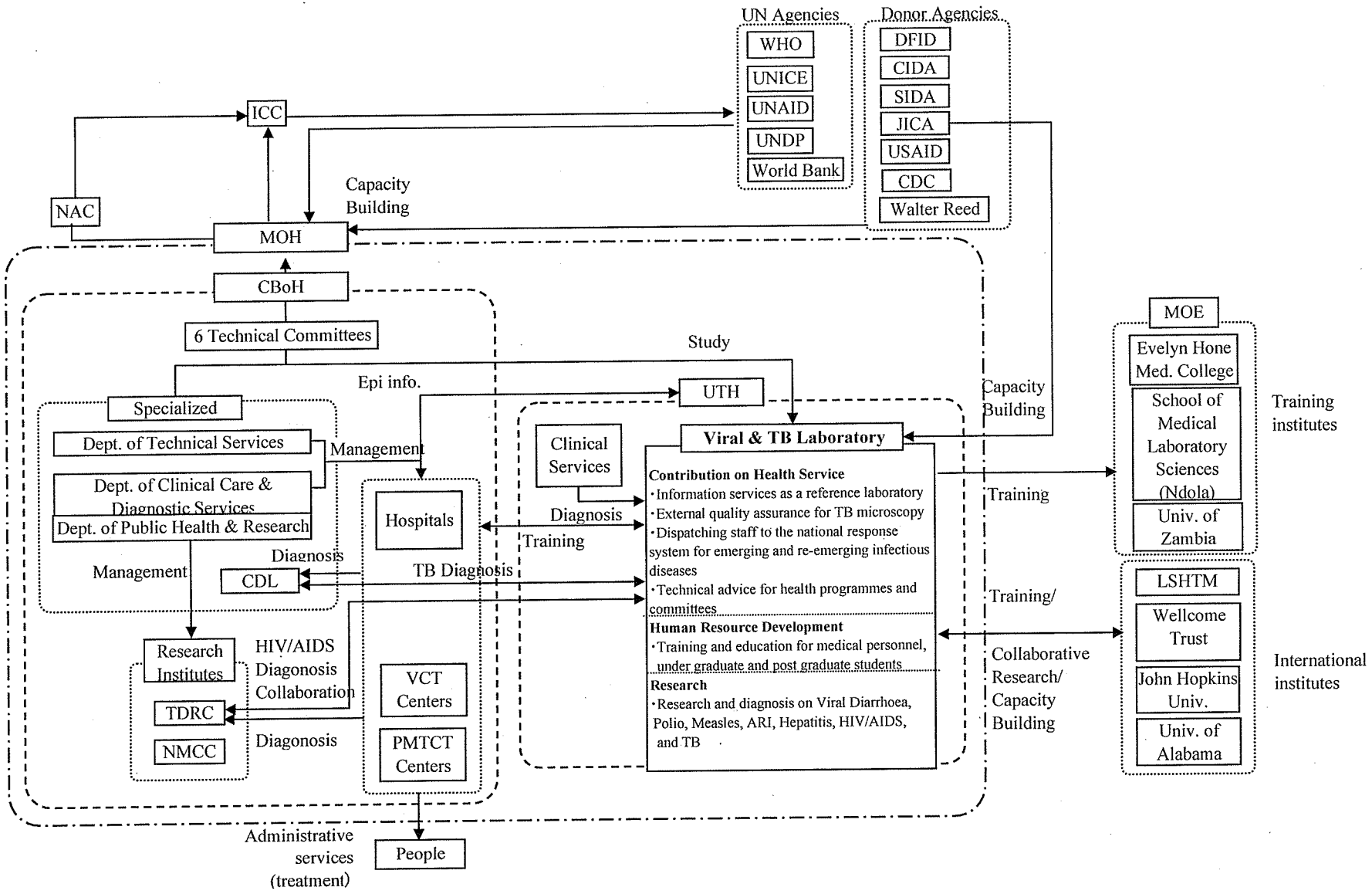
Zambia's infectious diseases control programmes are mainly implemented by the CBoH. The Department of Public Health and Research of the CBoH consigns research and studies required for infectious diseases control to the infectious diseases research institutes, such as the TDRC, the virology and the TB laboratories of the UTH, in order to obtain the required data. Using this data, the relevant departments of the CBoH prepare the action plans for infectious diseases control and inform the hospitals and health facilities regarding this.

If an infectious disease epidemic occurs in a rural area, the TDRC or UTH will diagnose the specimens sent by the rural hospitals. If the TDRC is incapable of diagnosing some of the specimens, the UTH will be asked to diagnose or identify them. The epidemiological data that is obtained through this process is disseminated to the MOH and the WHO.

The HIV Sentinel survey is conducted by the TDRCs in the northern region and by the Virology Laboratory at the UTH in the southern region. In addition, quality assurance for TB microscopy centers is conducted by the TB Laboratory at the UTH in Lusaka Province and by the CDL for all other provinces.

The relationship between the Virology and TB Laboratories and Other Organizations Involved in Infectious Disease control in Zambia is shown in Figure 6.3.

**Figure 6.3 Relationship between the Virology and TB Laboratories and Other Organizations for Communicable Diseases Control**




Prepared by the investigation team

## 6.3 Contribution of the Virology Laboratory and the TB Laboratory of the UTH to Communicable Diseases Control Based Cooperation Provided by JICA

The Virology Laboratory and TB Laboratory of UTH have largely developed their research infrastructure and research capacity based on cooperation with JICA. Collaborative research with foreign institutes is also implemented by the Virology Laboratory.

The Virology Laboratory and the TB Laboratory of UTH have contributed to improving infectious diseases control through the dissemination of research outputs and diagnostic techniques among medical personnel, and by having research outputs reflected in the health services of the GRZ.

The research outputs that contributed to human resources development or health services are summarized below according to the disease.

### 6.3.1 Contribution to the Control of Each Disease

#### (1) Establishment of National Surveillance Network on Viral Communicable Diseases

JICA had assisted activities for the establishment of surveillance systems for EPI diseases and HIV/AIDS since the beginning of its cooperation. The Virology Laboratory of the UTH has largely contributed to the establishment of a surveillance network in Zambia through this cooperation and to various surveillance systems implemented by the CBoH as a reference laboratory for polio, measles and HIV/AIDS. As a result of these activities, the wild poliovirus has not occurred in Zambia since 1997. WHO plans to dispatch a team for the authorization of Zambia as a polio free country in 2005.

#### 1) Contribution to Polio Eradication

For poliomyelitis, surveillance relies heavily on laboratory services. Since AFP has multiple causes, laboratory isolation of the wild poliovirus from the stools of patients is necessary for the confirmation of poliomyelitis.

The Virology Laboratory of the UTH was the only the laboratory that had adequate cell culture facilities for isolating the poliovirus in Zambia. In cooperation with the EPI Programme and Polio Eradication Programme, the Virology Laboratory of the UTH conducted workshops to improve the surveillance capacity of laboratories in provincial and district hospitals. In order to establish the surveillance structure for polio, the Virology Laboratory held ICTPs between 1994 and 2003 for doctors and technologists in provincial and district hospitals (see Table 6.8).

**Table 6.8 List of ICTPs**

| Title | Period | No. of participants |
|---|---|---|
| Epidemiology and Control of Vaccine Preventable Viral Diseases | 27 Jan. 1994 | N.A. |
| Reverse Cold Chain Workshop | 19-24 Oct 1994 | N.A. |
| HIV and Tissue Culture Workshop | 8-11 Sep 1994 | N.A. |
| Department of Pathology and Microbiology, Departmental seminar | 11 Nov. 1994 | N.A. |
| Infectious Diseases of Viral Organs | 26 Sep 1995 | 226 (Doctors and technicians) |
| Workshop on HIV Testing / Polio Eradication (Kitwe) | Jan. 1996 | |
| Workshop on HIV Testing / Polio Eradication (Lusaka) | May 1996 | |
| Workshop on HIV Testing / Polio Eradication (Lusaka) | March 1997 | |
| Training Workshop for HIV testing and Polio Surveillance (Lusaka) | March 1998 | |
| Training Workshop for HIV/STDs & TB testing and Polio Surveillance (Lusaka) | March 1999 | |

Prepared by the investigation team

The doctors and technologists who were trained in the workshop worked for national surveillance on polio. In the national surveillance on polio, all samples collected by those working in rural laboratories were sent to and were diagnosed by the Virology Laboratory of the UTH.

The workshops held after 1996 covered not only polio, but also HIV testing.

The Virology Laboratory has also played the role of a national and inter-country reference laboratory. The Virology Laboratory investigated stool samples collected from children with AFP in Zambia (131) and Tanzania (197) in the period 1993 to 2000. As a result, thirteen cased of wild poliovirus 1 – associated AFP were identified in Zambia (7) and Tanzania (6) between the period 1994 to 1997 (see Table 6.9 and 5.10).

**Table 6.9 Results of Virus Isolation from Stool Samples of AFP Cases in Zambia**

Unit: Sample

| Strain | 1993/4 | 1995/6 | 1997/8 | 1999/2000 |
|---|---|---|---|---|
| Polio 1 (Wild) | 0 | 7 | 0 | 0 |
| Polio (vaccine type) | 0 | 0 | 1 | 0 |
| Non-polio enteroviruses | 4 | 6 | 1 | 2 |
| No virus isolation | 7 | 48 | 31 | 24 |
| Total | 11 | 61 | 33 | 26 |

Source: JICA Infectious Diseases Control Project (2000), Viral Infections and Tuberculosis in Zambia 1989-2000

**Table 6.10 Results of Virus Isolation from Stool Samples of AFP Cases in Tanzania**

Unit : sample

| Strain | 1994/5 | 1996/7 | 1998/9 | 1999/2000 |
|---|---|---|---|---|
| Polio 1 (Wild) | 3 | 3 | 0 | 0 |
| Polio (vaccine type) | 5 | 0 | 1 | 3 |
| Non-polio enteroviruses | 1 | 0 | 6 | 0 |
| No virus isolation | 12 | 24 | 88 | 51 |
| Total | 21 | 27 | 95 | 54 |

Source: JICA Infectious Diseases Control Project (2000), Viral Infections and Tuberculosis in Zambia 1989-2000

Based on these surveillance results, CBoH strengthened vaccine immunization activities, such as national immunization days. As a result of activities carried out by related organization such as the MOH and the Virology Laboratory of the UTH, the wild poliovirus has not been seen in Zambia since 1997. WHO plans to dispatch teams for the authorisation of Zambia as a polio free country in 2005.

In addition, as the inter-country reference laboratory for polio, the Virology Laboratory has contributed to polio eradication activities in neighbouring countries through the diagnosis of about 700 samples of suspected cases annually from Tanzania and Zambia. The Virology Laboratory identified one imported case from Angola in 2001.

### 2) Contribution to Measles Control

National surveillance on measles utilises the same system and laboratories as the polio surveillance system. As the national reference laboratory for measles, the Virology Laboratory tests all suspected samples in Zambia. In addition, the Laboratory dispatches staff members to the target area for sample collection.

The Virology Laboratory provided technical advice to the CBoH for the planning of the national measles campaign and also conducted monitoring activities such as a study on the change in the prevalence rate of measles before and after the campaign. Thus, the Virology Laboratory has also contributed to the establishment of a surveillance system, and the implementation and monitoring of actual surveillance.

Based on the research outputs, the Virology Laboratory recommended that WHO lower the vaccination age from 9 months of age. However, the Immunization Plan is made for the African region as a whole with the support of WHO. The South African Region to which Zambia belongs selected other measles control measures, not the lowering of the vaccination age.

### 3) National HIV Surveillance

The HIV status of antenatal care recipients at 24 sentinel sites has been examined through the Sentinel Surveillance of HIV/AIDS and Syphilis. The Virology Laboratory at the UTH has performed the confirmatory results and quality assurance of sentinel surveillance since the laboratory was recognized as a national reference laboratory on HIV/AIDS.

The Virology Laboratory was responsible for the Southern Region (sites in Southern, Western, Lusaka, Central and Eastern provinces) and TDRC, and another national reference laboratory was responsible for the remaining areas. All of the specimens

collected at the sites were diagnosed by laboratory technicians at the site of the laboratories. These technicians acquired the necessary techniques from the ICTP for HIV/AIDS held by the Virology Laboratory at the UTH, as mentioned above. The Virology Laboratory of the UTH contributed to providing reliable epidemic information on HIV/AIDS through its activities to improve the accuracy of the sentinel survey for HIV/AIDS.

**4) Publication of Guidelines/Manuals**

The Virology Laboratory at the UTH has published the following guidelines and manuals. These guidelines and manuals were distributed to and utilised by laboratory technicians throughout the country.

- National Guidelines for Infectious Diseases
- Laboratory Manual for Technicians in Zambia
- Surveillance guidelines and laboratory testing guidelines for notifiable viral diseases
- Laboratory Manual on HIV and Related Diseases

Besides these guidelines and manuals, the Virology Laboratory at the UTH also provided the CBoH with technical support when the CBoH published the EPI manual.

These manuals were distributed to technicians and medical personnel in Zambia, and were utilized for improving diagnostic techniques and implementing surveillance. The virology laboratory at UTH contributed to strengthening the diagnostic capacity of the rural laboratories and national surveillance system through the preparation of guidelines and manuals. The Virology Laboratory was revising the Laboratory Manual for Technicians in Zambia in August 2004 when the field survey for this evaluation was conducted.

**(2) Promotion of ART**

Zambia has recently embraced the WHO/UNAIDS global 3 by 5 ART programme whose aim is to have 3 million people in the developing countries on antiretroviral treatment by the end of the year 2005. Through this programme, the GRZ intends scaling up access to ART from the 4,000 in 2004 to 100,000 people living with HIV/AIDS (PLWHA) by the end of 2005. The GRZ has already allocated K12 billion (US$3 million) for the purchase of ARV drugs. The government ART programme began with two pilot sites at the UTH and Ndola Central Hospital (NCH) at first, then expanded nationwide.

The Virology Laboratory at the UTH has contributed to promoting ART through the following.

### 1) Dissemination of inexpensive technologies for CD4 count testing

The GRZ has established an ART centre in each provincial hospital in Zambia to promote ART. The Virology Laboratory at the UTH has supported this exercise by introducing CD4 count techniques for ARV monitoring to each of these centres.

During this technology dissemination, the Virology Laboratory of the UTH introduced the Dynabead method in consideration of its cost effectiveness and the simplicity of the technique as shown in Table 6.11.

**Table 6.11 Comparison of CD4 Count Methods**

| CD4 Count Methods | Equipment (US$) | Test Cost (US$/test) | Work time (Min/test) | Max. Test Number (Test/6hr-day) |
|---|---|---|---|---|
| Total lymphocyte count | 30,000 | 1.5 | 2 | 80-120 |
| Flow cytometry (FACSCalibur) | 82,000 | 14 | 5 | 40-60 |
| FACSCount | 42,000 | 13 | 5 | 40-60 |
| Dynabead | 4,500 | 3 | 10-15 | 12-18 |

Source: UTH (2004), UTH-JICA Newsletter 1 Jan. 2004

The Virology Laboratory of the UTH also conducts follow-up surveys at these nine ART centres every three months. In addition, the laboratory also donates equipment such as Dynal magnets, microscopes, rotators, and micropipettes to all these ART centres. The ART centres conduct CD4 counts using the Dynabead method with the support of the Virology Laboratory of the UTH.

As mentioned above, the Virology Laboratory also contributed to improving the diagnostic accuracy of VCT and PMTCT centres through training in rapid HIV testing for counsellors, nurses and midwives who are involved in VCT and PMTCT services and quality assurance and quality control for these tests.

Thus, the Virology Laboratory of the UTH assists ART centers and VCT and PMTCT centers in the accurate diagnosis of patients by providing technical support and consumable items.

### 2) Monitoring Drug Resistance

The Virology Laboratory at UTH, being the only centre with facilities for the genetic typing of HIV strains, has taken the lead in monitoring emergent resistance to ARV drugs. The laboratory contributed to strengthening the monitoring of drug resistance through the implementation of a baseline survey in Lusaka, the development of a protocol for resistance monitoring, the selection of sentinel sites throughout the country, and the training of staff at these sentinel sites.

### 3) Training for Laboratory Technicians

The Virology Laboratory at the UTH held ICTPs for HIV testing together with ICTPs for polio eradication between 1994 and 1999, and also held ICTPs for rapid test kits for HIV targeting 460 laboratory technicians and counsellors in hospitals, health centres and for VCT/MTCT from 2001 to 2003.

The Virology Laboratory at the UTH also prepared and disseminated a "Laboratory Manual on HIV and Related Diseases", and provided technical assistance to the CBoH for preparing the "HIV/ART and Syphilis Infections Training Manual". These manuals are disseminated to laboratories and medical personnel in Zambia for the training of laboratory technicians.

As mentioned above, the establishment of a diagnostic system for HIV/AIDS is urgently required in Zambia due to the adoption of the 3 by 5 ART programme. The Virology Laboratory at the UTH contributed to capacity building for laboratory technicians who participate in ART through the training of laboratory technicians and counsellors in hospitals, health centres and the VCT/MTCT programmes besides the dissemination of the laboratory manuals.

### (3) External Quality Assessment for Microscopy Centres

The TB laboratory of the UTH has undertaken to improve the reliability of TB diagnostic services by introducing EQA.

As a part of the ICTP, the TB laboratory trained 46 technicians and technologists from 22 TB microscopy centres in Lusaka Province. One week training sessions were conducted for groups of 15 technicians per session. In addition, the participants were also introduced to the EQA guidelines.

The results of diagnostic examinations when comparing the diagnostic capacity of technicians before and after training shows that the diagnostic capacity of all 46 technicians was significantly improved. In addition, these technicians were continually monitored for their diagnostic capacity, and are provided training again if necessary. The diagnosis capacity of the 22 microscopy centers in Lusaka Province was significantly improved through the training and monitoring by the TB Laboratory of the UTH.

All microscopy slides diagnosed by the microscopy centers are required to be stored for sampling surveys by the TB Laboratory of the UTH as a part of EQC. This EQA enhances the Directly Observed Treatment Short-course (DOTS) by accurately determining TB patients, thus resulting in the early diagnosis and treatment of patients.

### (4) Diagnosis of Samples from Hospitals

Besides the research activities on infectious diseases control, the Virology Laboratories diagnose samples from patients of the UTH and private hospitals. These services directly bring benefits to patients of the UTH. More than 9,000 samples from patients have been diagnosed annually (see Table 6.12).

**Table 6.12 Number of Virology Laboratory Services Provided to the UTH and Private Hospitals**

Unit: tests

| | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| No. of HIV tests* | 746 | 875 | 1,869 | 2,710 |
| UTH | 741 | 581 | 1,787 | 2,708 |
| Private | 5 | 294 | 82 | 2 |
| No. of CD4 count tests | - | 1,711 | 700 | 2,979 |
| UTH | - | 1,242 | 282 | 1,486 |
| Private | - | 469 | 418 | 1,493 |
| No. of Viral Load tests | - | 420 | 483 | 400 |
| UTH | - | 206 | 145 | 59 |
| Private | - | 214 | 338 | 341 |
| No. of Hepatitis tests | 33 | 733 | 710 | 753 |
| UTH | 32 | 732 | 704 | 753 |
| Private | 1 | 1 | 6 | 0 |
| No. of RPR tests (STD) | 1,112 | 2,912 | 2,911 | 2,232 |
| UTH | 1,054 | 2,577 | 2,722 | 2,052 |
| Private | 58 | 335 | 189 | 180 |
| No. of RF tests* | 79 | 283 | 189 | 166 |
| UTH | 78 | 257 | 178 | 166 |
| Private | 1 | 26 | 11 | 0 |
| Total | 1,970 | 6,934 | 6,862 | 9,240 |

Prepared by the investigation team

The Virology Laboratory of the UTH contributed to sustaining the health status of the population through the production of sophisticated diagnostic techniques transferred in the process of JICA's cooperation.

### (5) JICA's Cooperation with the Virology Laboratory and TB Laboratory

As mentioned above, JICA has supported various types of research activities for infectious diseases since the establishment of the Virology Laboratory and TB Laboratory of the UTH. The research capacity of both laboratories established through the technical cooperation provided by JICA has been utilized or applied in the implementation of surveillance and reference services. Diagnostic techniques transferred through JICA training have been disseminated to medical personnel such as technicians in public hospitals and VCT, etc.

As mentioned in 6.2.4, all target diseases of the Virology Laboratory and TB Laboratory of the UTH were covered in JICA's cooperation activities. It was confirmed that both laboratories have conducted activities for human resources development for four diseases and the improvement of health services for five diseases (see Table 6.13)

**Table 6.13 JICA Cooperation in Diseases Control**

| Target diseases | Research | Human Resources Development | Contribution to Health Services | | |
|---|---|---|---|---|---|
| | | | Surveillance | Reference | Direct Contribution to the Population |
| Polio | ○ | ○ | ○ | ○ | ― |
| Measles | ○ | ○ | ○ | ○ | ― |
| ARI | ○ | ― | ○ | ○ | ― |
| HIV/AIDS | ○ | ○ | ○ | ○ | ― |
| TB | ○ | ○ | ○ | ○ | ― |
| Viral Diarrhoeal | ○ | ― | ○ | ― | ― |
| Diagnosis of Samples from Hospitals | ― | | | | ○ |

Prepared by the investigation team

### 6.3.2 Achievements of JICA Cooperation

As mentioned in Section 6.3.1, both laboratories have contributed to infectious diseases control through cooperation with JICA. JICA's cooperation contributed not only to disease control, but also to capacity development in both laboratories. The achievements of JICA's cooperation for capacity development in both the laboratories are described as follows.

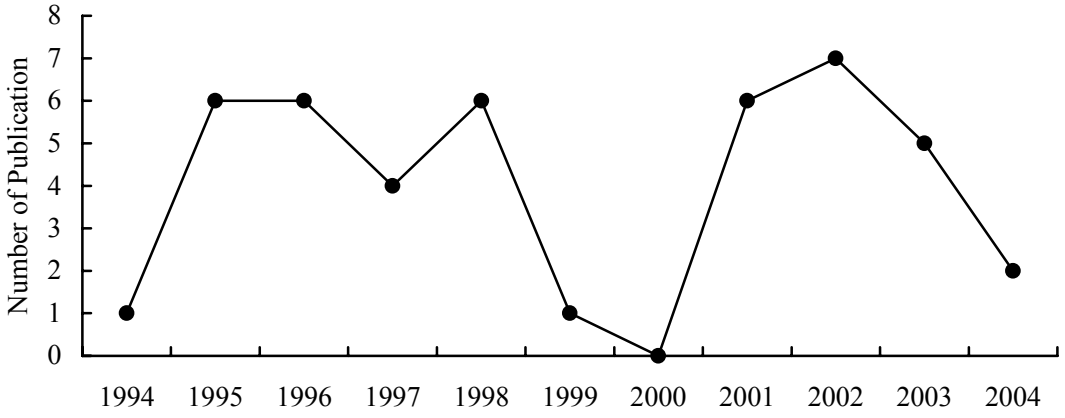
#### (1) Capacity Development of the Virology Laboratory and TB Laboratory

As mentioned in Section 6.1.3, JICA's cooperation aimed to establish diagnostic capacity for infectious diseases in Zambia

The Virology Laboratory has functioned as a WHO national reference laboratory for influenza and measles, and also as a WHO inter-country reference laboratory for polio without any assistance from JICA, since JICA's cooperation for influenza, measles and polio was terminated on 2000.

In addition, the research outputs of both laboratories have appeared in internal/external journals (see Figure 6.4)

**Figure 6.4 Number of Publications Contributed by the Virology and Tuberculosis Laboratories**




Prepared by the investigation team

Both laboratories have consistently published papers almost every year, although the number of publication has fluctuated since the scale and capacity of the institute is smaller than NMIMR and KEMRI.

The Virology Laboratory has operated as a WHO inter-country reference laboratory for more than three years, and both laboratories have published papers almost every year. This research capacity has been developed based on JICA's continued cooperation.

### (2) Infrastructure Developments

In contrast to NMIMR and KEMRI, whose facilities were developed by Japanese grant aid, the facilities and equipment of the Virology Laboratory and TB Laboratory of the UTH were developed through technical cooperation provided by JICA.

The infrastructure and equipment developed by JICA enabled the Virology Laboratory to implement collaborative research with foreign institutes. This collaborative research with other foreign institutes also improved the research capacity of the Virology Laboratory of the UTH through equipment and technology transfers.

### (3) Strengthening the Capacity for Research Implementation

It would not be an exaggeration to state that most of the research infrastructure and research capacity of both these laboratories of the UTH are the outputs of assistance from Japan.

Both laboratories have been assigned infectious diseases control functions by the MOH as reference laboratories, and the Virology Laboratory has the capacity to conduct collaborative research with foreign institutes. This capacity also enables both laboratories to continuously obtain or procure research grants from foreign institutes, and to strengthen their financial base.

The budget of the UTH consists of the budget from the GRZ, income from fees collected, referral income and other income. The budget from the GRZ consists of two parts, one is an operational grant for medical services, and the other is for personnel costs. In the "Action Plan and Budget for 2003", the UTH projected about K69.4billion (US$147.7 thousand) as income in 2003 (see Table 6.14).

**Table 6.14 Projected Income of the UTH in 2003**

Unit: Kwacha

| Source of Income | Amount |
|---|---|
| Projected allocation | 28,895,000,000 |
| - Operational grants | 4,895,000,000 |
| - Personnel costs | 24,000,000,000 |
| Projected Income from fees collected | 2,394,000,000 |
| Referral income | 654,000,000 |
| Other income | 8,529,000,000 |
| Total Projected funds | 69,367,000,000 |

Source: University Teaching Hospital (2003), Action Plan and Budget for 2003

The Department of Laboratory Services was allotted 969 million Kwacha (about 2 million US dollars) in 2003 from the above budget. A part of this budget allocated to the Virology and TB Laboratories consists of fixed expenditures.

The Virology and TB Laboratories rely for their development expenditures on grants from their foreign partners. Although JICA is one of the main partners of the Virology and TB Laboratories, the laboratories have many other partners for research collaboration (see Table 6.15).

**Table 6.15 Collaborating Institutions of the Virology and TB Laboratories in 2004**

| Cooperating Institution | Funding Organization | Budget | |
|---|---|---|---|
| | | (US$) | Note |
| Johns Hopkins University | NIH | N.A. | |
| London School of Hygiene and Tropical Medicine | Burroughs Wellcome Trust | 900,000 | annually |
| London School of Hygiene and Tropical Medicine | Thrasher Foundation | 100,000 | |
| University College London | European Union | N.A. | |
| London School of Hygiene and Tropical Medicine | Wellcome Trust | 80,000 | pounds |
| WHO/Ministry of Health | WHO | 12,000 | annually |
| Yamanashi Medical University, Japan/Obiken Pharmaceutical Co. | Obiken Pharma Co | 100,000 | |
| Yamanashi Medical University, Japan/Lymphotec Inc. Japan | Lymphotec Inc | N.A. | |
| Institute of Child Health, London | Wellcome Trust | 500,000 | |
| Institute of Child Health, London | | N.A. | |
| Ministry of Health | JICA/NORAD | 400,000 | for 2 years |
| TDRC/Ministry of Health | CDC/JICA/SIDA | 316,000 | for 2 years |
| NAC | UNESCO/NAC | N.A. | |

Prepared by the investigation team

JICA disbursed 94.52 million yen for the operational costs of the HIV/AIDS and Tuberculosis Control Project from March 2001 to November 2003 (about 34.37

million yen per year). Although the evaluation team could not confirm part of the budget with the collaborating partners, it is estimated that JICA's operational costs provided about 13% of the funds from the collaborating partners shown on Table 6.14.

The research activities described above consist mainly of joint research activities conducted with overseas research institutions. A case example of joint research implemented between the UTH and an overseas research institute in 2004 is shown in Table 6.8.

Since the equipment is commonly used not only for JICA projects, but also by other collaborating partners, the Virology and TB Laboratories introduced a sharing system for the maintenance costs among the collaborating partners, include JICA. Although some equipment has not been repaired for budgetary reasons, the laboratories are appropriately managed within the limited budget.

According to the head of the Virology Laboratory, the number of collaborative research projects has increased every year. In addition, as shown in the table above, WHO pays the Virology Laboratory operational costs for its role as an inter-country reference laboratory every year.

The Virology Laboratory's role as a WHO inter-country reference laboratory and its large income source from collaborative research are possible due to the research capacity and infrastructure developed through the cooperation provided by JICA. Technical cooperation with JICA has, therefore, contributed to strengthening the financial sustainability of the Virology Laboratory.

**(4) Technical Advice to the MOH**

In addition to the activities of JICA projects, the Virology and TB Laboratories are designated as members of following committees, and six staff members of the laboratories (researchers and technologists) are also appointed as members of technical working groups of the NAC to provide technical advice.

- National Polio Expert Committee
- National Taskforce for Polio Containment
- Inter-agency Contingency Committee
- National ARV Committee
- Epidemic Preparedness Committee

The capacity developed through JICA cooperation is well utilized for policy making by the MOH through these health committees.

**(5) Targeted Support from the MOH**

The MOH has prioritized Infectious Diseases Control since the beginning of JICA's cooperation. Under the strong leadership of the MOH, JICA has continued to cooperate with the UTH since 1989. In addition, the Zambian Project Manager for the Infectious Diseases Project became the Minister of Health from 1996 to 2000.

Due to the Minister's clear understanding of the project contents, the UTH was appropriately supported by the MOH. The support of the MOH is one of the factors contributing to the success of the JICA projects.

### 6.3.3 Conclusions

JICA has implemented technical cooperation with the Virology Laboratory and TB Laboratory of the UTH to establish the diagnostic capacity for infectious diseases control in Zambia. As a result, both laboratories have contributed to strengthening the diagnostic capacity of Zambia through the establishment of a national surveillance system for polio and measles, and the introduction of EQA for HIV and TB testing, etc. In addition, the Virology Laboratory has played an important role in infectious diseases control as a WHO inter-country reference laboratory for polio and as a national reference laboratory for measles and influenza. The Virology Laboratory already has the capacity to fulfil its role without any assistance from JICA's cooperation.

Both laboratories provide the function of diagnosis, which differs from NMIMR and KEMRI. Thus the contribution of both laboratories to infectious diseases control is also to provide reference and surveillance services, such as for polio eradication.

As bases for research and diagnosis as well as for the human resources development, the Virology and TB laboratories have conducted a series of activities that include the training of laboratory technicians in rural areas and the diagnosis of specimens, and have produced outputs that came up to the expectations of JICA.

In addition, the Virology and TB Laboratories contribute to human resources development by conducting clinical training for students as laboratories of the university teaching hospital and also conduct training for medical personnel.

Thus, it is judged that the Virology Laboratory and the TB Laboratory have greatly contributed to the establishment of diagnostic capacity in Zambia using the research capacity developed through JICA's cooperation.

## 6.4 Expected Roles of the Virology Laboratory and TB Laboratory of the UTH

The Virology Laboratory and TB Laboratory of the UTH have contributed to improving infectious diseases control in Zambia in cooperation with JICA. The expected roles of both laboratories for further contributions to infectious diseases control are summarized from the viewpoint of research and laboratory services, human resources development and their contribution to health services.

### (1) Research and Laboratory Services

The virology laboratory and TB laboratory of the UTH have contributed to infectious disease control of the MOH using the research capacity developed through JICA's cooperation. The Virology Laboratory and TB Laboratory are diagnostic units of the UTH and have contributed to infectious diseases control in the areas of testing, diagnosis and surveillance. Although polio eradication has almost been achieved in Zambia, polio eradication activities are still ongoing in neighbouring countries. In addition, there have been intermittent outbreaks of measles. In view of this situation,

it is expected that the Virology Laboratory will continue to contribute to the control of EPI-related diseases as a reference laboratory.

HIV/AIDS is recognized as a national disaster in Zambia. Therefore, the Virology Laboratory is required to fulfill an important role as the national HIV/AIDS reference laboratory. In particular, the strengthening of the diagnostic capacity for HIV and opportunistic infections such as TB will be one of the main issues for the health sector due to the adoption of the global 3 by 5 ART programme.

RVT is a new development, and involves many research topics for the future. It is also estimated that CVT, a participatory regional health activity will also be one of the important issues for operational research. Thus, it is expected that the Virology and TB Laboratories will continue to conduct activities to strengthen their diagnostic capacity.

**(2) Human Resources Development**

The Virology Laboratory and TB Laboratory held a series of training courses including workshops for technicians in provincial and district hospitals aimed at HIV and polio surveillance, introducing inexpensive the CD4 counting method to provincial hospitals, and introducing quality assurance systems to microscopy centers in Lusaka province. In particular, a series of workshops on HIV testing and polio eradication largely contributed to the establishment of the national surveillance system for HIV/AIDS and polio.

A national surveillance system for polio and measles has already been established in Zambia based on the series of cooperation activities supported by JICA. It is expected that the Virology Laboratory will strive to maintain the national surveillance system through the implementation of training for technicians in regional and district laboratories as required. In addition, the training of the next generation of medical personnel is also an important role of both laboratories as institutes of a university teaching hospital.

On the other hand, it is necessary to strengthen the HIV diagnostic capacity of provincial/district hospitals and VCT and to establish the EQA for TB diagnosis nationwide. Therefore, training needs will increase in the fields of HIV/AIDS and TB in the near future. It is expected that the Virology and TB Laboratories will contribute to strengthening the capacity of human resources in the health sector by conducting training in these fields.

**(3) Contribution to the Health Services**

Both the Virology and TB Laboratories have contributed to health services from the aspects of providing surveillance and reference services. In particular, the Virology Laboratory has made a major contribution in the field of polio, measles and HIV/AIDS control, such as through the establishment of a surveillance system and its implementation, QA for diagnosis, etc. These functions as a reference laboratory should be continued in the future.

Regarding HIV/AIDS, it is necessary to strengthen the diagnostic functions urgently due to the promotion of ART. It is also necessary to strengthen the diagnostic functions for TB, one of the typical opportunistic infections related to HIV/AIDS. As

a reference laboratory as well as being in charge of the EQA, both the Virology and TB Laboratories should contribute to strengthening the diagnostic system for HIV/AIDS and TB in Zambia.

Measles also occurs as an intermittent epidemic in Zambia. The Virology Laboratory should conduct surveillance and provide information for related organizations as the national reference laboratory for measles.

The expected roles of the Virology Laboratory and TB Laboratory in relation to infectious diseases control are summarized in Table 6.16.

**Table 6.16 Expected Roles of the Virology and TB Laboratories in Relation to Communicable Diseases Control**

| Areas | Roles |
|---|---|
| Research | ➢ Research targets are viral and bacterial infectious diseases<br>➢ Epidemiological surveys and studies<br>➢ Improving diagnostic methods using classical and modern technology, such as isolation and identification as basic techniques, and molecular analysis<br>➢ Drug resistance and sensitivity<br>➢ Evaluation of research and study results or outcomes<br>➢ Collaborative research with institutes, universities and hospitals within the country or overseas. |
| Human resources development | ➢ Pre-service training for students of universities and colleges.<br>➢ Retraining in diagnostic techniques for medical workers.<br>➢ Technical transfer of diagnostic methods and QC/QA to provincial / district hospitals. |
| Health Services | 【Surveillance Services】<br>➢ Contribution to the national response system for emerging and re-emerging infectious diseases<br>【Reference Services】<br>➢ Reporting to CBoH/MOH as a national reference laboratory<br>➢ Reporting to WHO as a national and inter-countries reference centre<br>➢ Dissemination of testing and diagnosis technology<br>【Others】<br>➢ Technical advice and consultation to the MOH and related programmes |
| Laboratory services | ➢ Laboratory diagnostic service for the UTH |

Prepared by the investigation team

## Annex 6.1 Activities of the UTH-JICA Programme

| | Infectious Diseases Project Phase I and F/U | Infectious Diseases Control Project | HIV/AIDS and TB Control Project (at the point of Dec. 2000) |
|---|---|---|---|
| **Diarrhoea** | ➢ Study on seasonal fluctuations in rotaviruses<br>➢ Study of the relationship between rotaviruses and HIV<br>➢ Study of diarrhoea pathogens at Urban Health Centres | ➢ Identification of two diarrhoea pathogens through electron microscopic studies | |
| **ARI** | ➢ Isolation of the influenza virus | ➢ Appointment as a national reference laboratory by WHO<br>➢ Continuous field studies and diagnosis of pathogens at Urban Health Centres | |
| **Hepatitis** | ➢ Survey of Hepatitis B in pregnant women and blood donors<br>➢ Horizontal transmission control in childhood | ➢ Technical support for immunological diagnosis of hepatitis<br>➢ Survey on Hepatitis B in pregnant women and blood donors<br>➢ Horizontal transmission control in childhood<br>➢ Study of pathogens in hepatic failure<br>➢ Epidemiology of Hepatitis A and C | |
| **Polio** | ➢ Isolation of Echo3 virus from patients who are suspected of contracting polio<br>➢ Isolation of the polio virus and vaccine assays | ➢ Appointment as a national reference laboratory by WHO<br>➢ Increasing the sample numbers through the surveillance system | |
| **Measles** | ➢ Proposal of inoculation period (under 9 months year) and review of vaccine quality control method to MOH and WHO | ➢ Strengthening of the surveillance system and the detection of five outbreaks | |
| **HIV/AIDS** | ➢ Diagnostic activities through a hospital network in the national reference laboratory<br>➢ Technical training for laboratory technicians in hospitals nationwide | ➢ Technical support for immunological diagnosis of HIV<br>➢ Appointment as the national reference laboratory on HIV diagnosis<br>➢ In charge of quality control for the national survey in 1998<br>➢ Establishment of the PCR method for HIV diagnosis<br>➢ Establishment of analytical methods using serological tests and CD4/CD8 counts using flow cytemeters | ➢ Technical support for the evaluation of anti-HIV drugs, assay of drug resistance, surveillance and analysis of HIV immuno reactions at the UTH laboratory<br>➢ Evaluation of HIV test kits, data management of diagnosis and quality control of test kits<br>➢ Training for laboratory technicians and counsellors in rural hospitals, health centers and VCT/MTCTs (17 times for a total of 460 persons)<br>➢ Expansion of the number of VTC/MTCT centres from 30 to 106 (by Dec. 2000), and the number of examinations (approximately 380,000 tests) |
| **Tuberculosis** | | ➢ Identification of TB through the examination of sputum and tissue cultures | ➢ Training for surveillance on the examination of drug resistance, the introduction of MIGT methods, finger print methods and the DDH method<br>➢ Surveillance of drug resistant bacteria in Lusaka Province and the establishment of quality control systems in rural TB centres (demarcation with CDC)<br>➢ Retraining in basic diagnostic techniques for TB testing (6 times in total 81laboratory technicians)<br>➢ Guidelines on external quality control of diagnosis |

Prepared by the investigation team

## Annex 6.2 Inputs by JICA

### Annex 6.2.1 Dispatch of JICA Experts

| | Infectious Diseases Project Phase I and F/U | | | | Infectious Diseases Control Project *1 | | | | HIV/AIDS and TB Control Project*2 | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Long term | | Short term | | Long term | | Short term | | Long term | | Short term | | Long term | | Short term | |
| | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M | Person | M/M |
| Leader | 2 | 43.3 | - | - | 1 | 56.6 | - | - | 1 | 24.0 | - | - | 4 | 123.9 | 0 | 0.0 |
| Coordinator | 1 | 24.4 | 1 | 10.2 | 2 | 58.1 | - | - | 3 | 72.0 | - | - | 6 | 154.5 | 1 | 10.2 |
| Virology | 2 | 63.6 | 4 | 3.7 | 2 | 36.0 | 4 | 2.8 | - | - | - | - | 4 | 99.6 | 8 | 6.5 |
| Pediatrics | 2 | 57.5 | 4 | 3.0 | 1 | 12.0 | - | - | - | - | - | - | 3 | 69.5 | 4 | 3.0 |
| Medical Equipment | 2 | 53.6 | 1 | 0.7 | - | - | - | - | - | - | - | - | 2 | 53.6 | 1 | 0.7 |
| Bacteriology | - | - | 1 | 0.4 | 2 | 33.9 | 1 | 0.7 | - | - | - | - | 2 | 33.9 | 2 | 1.2 |
| Immunology | - | - | - | - | 1 | 24.0 | 6 | 6.6 | - | - | - | - | 1 | 24.0 | 6 | 6.6 |
| HIV/AIDS | - | - | - | - | 1 | 10.1 | - | - | 3 | 66.5 | 7 | 5.9 | 4 | 76.6 | 7 | 5.9 |
| TB | - | - | - | - | - | - | - | - | 1 | 2.1 | 1 | 0.4 | 1 | 2.1 | 1 | 0.4 |
| Public Health | - | - | - | - | - | - | - | - | 1 | 36.0 | - | - | 1 | 36.0 | 0 | 0.0 |
| Cooperation Planning | - | - | 2 | 0.7 | - | - | - | - | - | - | - | - | 0 | 0.0 | 2 | 0.7 |
| Clinical Research | - | - | 1 | 0.4 | - | - | - | - | - | - | - | - | 0 | 0.0 | 1 | 0.4 |
| Epidemiology | - | - | - | - | - | - | 3 | 3.9 | - | - | - | - | 0 | 0.0 | 3 | 3.9 |
| Construction | - | - | 3 | 11.0 | - | - | - | - | - | - | - | - | 0 | 0.0 | 3 | 11.0 |
| Total | 9 | 242.3 | 17 | 30.1 | 10 | 230.7 | 14 | 14.0 | 9 | 200.6 | 8 | 6.3 | 28 | 673.6 | 39 | 50.4 |

Note *1 Two individual experts (HIV/AIDS and Bacteriology) dispatched from April 2000 to March 2001 are included in the Infectious Diseases Control Project
*2 Data until November 2003.
Prepared by the investigation team

**Annex 6.2.2 Counterpart Training in Japan**

| | Infectious Diseases Project Phase I and F/U | | Infectious Diseases Control Project | | HIV/AIDS and TB Control Project[*1] | | Total | |
|---|---|---|---|---|---|---|---|---|
| | Persons | M/M | Persons | M/M | Persons | M/M | Persons | M/M |
| Virology | 9 | 102.1 | 5 | 48.5 | 1 | 12.1 | 15 | 162.7 |
| Bacteriology | 2 | 24.0 | 2 | 17.4 | 1 | 6.1 | 5 | 47.5 |
| Pediatrics | 4 | 20.6 | - | - | - | - | 4 | 20.6 |
| Hospital Management | 1 | 0.7 | - | - | 1 | 0.5 | 2 | 1.2 |
| Immunology | - | - | 3 | 25.2 | - | - | 3 | 25.2 |
| Epidemiology | - | - | - | - | 1 | 0.7 | 1 | 0.7 |
| HIV/AIDS | - | - | - | - | 2 | 4.8 | 0 | 0.0 |
| TB | - | - | - | - | 2 | 6.6 | 0 | 0.0 |
| Medical Equipment | 2 | 8.6 | - | - | - | - | 2 | 8.6 |
| Total | 18 | 156.0 | 10 | 91.1 | 8 | 30.8 | 36 | 277.8 |

Note ∗1 Data until November 2003.
Prepared by the investigation team

**Annex 6.2.3 Budgets for the Programme**

| | Infectious Diseases Project Phase I and F/U | | Infectious Diseases Control Project | | HIV/AIDS and TB Control Project[*1] | |
|---|---|---|---|---|---|---|
| JICA | | | | | | |
| Equipment | JP¥ | 345,000,000 | JP¥ | 211,270,000 | JP¥ | 91,703 |
| Operational Costs | | | JP¥ | 117,716,000 | | |
| Construction | JP¥ | 30,000,000 | | | | |
| Others | | | | | JP¥ | 2,814 |
| Total | JP¥ | 375,000,000 | JP¥ | 328,986,000 | JP¥ | 94,517 |
| UTH | | | | | | |
| Operational Cost | | | US$ | 8,740 | | |

Note: Excluding personnel costs
∗1 Data up to November 2003.
1 US Dollar = 110 Japanese Yen (as of November 2003)
Prepared by the investigation team

# Section 3

# Cross-Sectional Analysis

# Section 3 Cross-Sectional Analysis

# 7 Conclusions

In this chapter, the effects of JICA's cooperation involving the three research institutes are examined and the similarities are analysed. At the end of the evaluation analysis, the direction for cooperation with the research institutes will be presented in the form of recommendations.

## 7.1 Effects of Cooperation with the Research Institutes

JICA cooperation with the NMIMR and KEMRI has focused on the enhancement of their research capabilities, while cooperation with the UTH Virology Laboratory and Tuberculosis Laboratory has been implemented for the purpose of the establishment of diagnostic capabilities for dealing with infectious diseases. In reviewing the relationship between each research institute and the respective supervising agency, NMIMR is a semi-autonomous institution under the University of Ghana, KEMRI is directly under the jurisdiction of the Kenyan Ministry of Health, and the UTH is the parent organization of the UTH Virology and Tuberculosis Laboratories, and is itself under the jurisdiction of the Ministry of Health (hospital facilities) and the Ministry of Education (school of medicine facilities).

As a result of the evaluation study, it has been found that the three institutes contribute to infectious diseases control through similar functions of research/diagnosis, human resources development, and surveillance/reference services under the framework of the functions of infectious diseases control, although their positioning as research institutes differs. The three research institutes, which have accepted long term technical transfers and facilities establishment, have now become centres of excellence for their respective countries and regions. Moreover, each research institute conducts research in line with the national health policies and contributes to enhancing public health.

According to the past project evaluation reports, the objects of JICA cooperation have been the three research institutes and the expected effects of cooperation have not been beyond research and human resources development. However, as can be seen from the fact that each research institute dispatches researchers to health programmes and committees organized by the health ministries and provides technical advice, and representatives of the health ministries are engaged in the management of the research institutes, JICA cooperation has affected administrative decision-making through the research institutes, and the institutes themselves conduct personnel training in relation to public health.

As shown in the case of the research institutes for infectious diseases control described in Chapter 2, the functions of each research institute include not only research, but also public health services such as human resources development, surveillance and reference services. As for the target research institutes for the evaluation study, JICA has strengthened the framework for the functions of these research institutes, which has led to enhanced infectious diseases control for their nations as a whole.

The following are the common effects of JICA cooperation at the three research institutes elucidated through the evaluation study.

### (1) Relationship with the Ministries of Health and Communicable Diseases Control

The NMIMR is a semi-autonomous research institute affiliated with the University of Ghana, while KEMRI was attached to the Ministry of Research, Technical Training and Technology (MRTTT) until 1999. Project evaluation reports have pointed out that the collaborative relationship between the two institutes and their Ministries of Health has become weakened and administrative changes that reflect the results of research have not been sufficiently established. However, as of 2004, when the evaluation study was implemented, the evaluation team confirmed that the three target research institutes, including the UTH, can now access administrative routes that make it possible to have the results of research reflected in infectious diseases control by the relevant Ministries of Health. For instance, NMIMR has held annual meetings and exchanges of ideas with the Ministry of Health since 2000, on the other hand, KEMRI has established its position as a core research institute for infectious diseases control in Kenya after its transition into a supervising agency of the Ministry of Health. Moreover, the UTH Virology Laboratory and TB Laboratory are regarded as national laboratories of Zambia, and miscommunication with the Ministry of Health no longer exists.

At present, the three research institutes conduct research through collaboration with their respective Ministries of Health, and they are regarded as research institutes for the purpose of infectious diseases control in each of the countries.

### (2) Contributions as Reference Laboratories and Collaborating Centres

The NMIMR, the KEMRI, and the UTH Virology and Tuberculosis Laboratories conduct testing and quality assurance in the process of infectious diseases control as reference laboratories, which cannot be replaced by any other laboratory in these countries or the surrounding countries. In particular, the UTH Virology Laboratory has contributed to eradicating polio in Zambia in cooperation with the Polio Eradication Programme.

As can be seen, in the case of Japan, the USA, and the UK, reference services are one of the main functions of research institutes concerned with infectious diseases. Through the provision of reference services by the research institutes, epidemic information can be kept updated and measures to contain the situation can be taken. For example, the test results for measles specimens obtained by the NMIMR in Ghana were used by the Ministry of Health in their decision to implement NIDs. In addition, the UTH Virology Laboratory has contributed to eradicating polio in its role as a reference laboratory.

The activities of reference laboratories do not directly benefit the populace, but indirectly help citizens to maintain their health. They also contribute to health policies and health administrative services.

### (3) Synergistic Effects on Technical Cooperation and Improved Foundations for Research

The facilities of the three target institutes of the evaluation study have been developed through Japanese assistance. Through this Japanese assistance, the research capacity

of the institutes has been developed as a result of the conduct of high level research using the established research facilities.

The research facilities provided through Japanese cooperation were essential for the acquisition of the advanced technology transferred from the Japanese counterparts. In addition, the establishment of a foundation for advanced research makes it possible to carry out joint research activities with overseas research institutions. Moreover, conducting joint research activities with overseas institutions has further enhanced the research capacity of each institute. Furthermore, the institutes, which are dependent on external research subsidies, are able to strengthen their financial basis through these joint research activities with overseas research institutions.

### (4) Human Resources Development

All three research institutes, the NMIMR, KEMRI, and UTH, are top-level institutes in their respective countries, and function not only as research institutes, but also as training facilities in the field of health and medicine. Each institute conducts technical training activities for health and medical personnel, as well as for graduate and undergraduate students. Moreover, the researchers at the NMIMR and KEMRI lecture at national universities in their respective countries.

Of the three institutions, the NMIMR and KEMRI are involved in JICA's third country training programmes. In contrast to KEMRI, which jointly implements third country training programmes with JICA, the NMIMR's third country training programmes for EPI diseases are jointly conducted by both JICA and the WHO. Even after JICA terminated cooperation, the NMIMR's third country training programme for EPI diseases has been jointly conducted with the WHO. In recent years, the NMIMR and KEMRI have been implementing third country training as a basis for WASIPAC and ESACIPAC, respectively, for international parasite control and have established their position as centres for human resources development for the surrounding countries.

As mentioned above, the three research institutes have strengthened their functions as research institutes in terms of facilities and research capabilities, and they are engaged in human capacity development in the field of health and medicine. In particular, the three research institutes promote the development of medical personnel who are expected to directly contribute to infectious diseases control by providing training in diagnostic techniques and the techniques required for national surveillance.

### (5) Contribution to Communicable Diseases Control through Health Programmes and Commissions of the Ministries of Health

Besides the above-mentioned services, each research institute dispatches researchers to health programmes and committees organized by their respective Ministries of Health, and provide advice to these ministries. The achievements of JICA cooperation have contributed to infectious diseases control by these governments in the form of technical assistance to health programmes and committees outside the scope of the research institutes, although this was not originally anticipated as an effect of cooperation.

## 7.2 Roles of the Research Institutes

JICA has implemented cooperation with the target research institutes for the purpose of enhancing health services by ensuring that the institutes function as bases for research and diagnosis for infectious diseases control and human resources development. The three research institutes became representative research institutes for infectious diseases both in their respective countries and in their regions through Japanese assistance in terms of techniques and their establishment as bases for research since each of them started. Despite the different relationship with respective to the ministry of health and the division of work with other related organizations, the research institutes have common functions comprising research/diagnosis, human resources development and contributions to health services.

As a result of the evaluation study, the evaluation team has confirmed that the institutes fulfil the functions expected of research institutes for infectious diseases control. The functions of such research institutes are analysed and their role in terms of acting as bases for research/diagnosis and human resources development are described in the following.

### (1) Research

A certain period of time is required to enable the results of basic research to be reflected in practical infectious disease control, although basic research is important in itself and essential to progress in medical sciences. Each research institute has accumulated epidemic information on infectious diseases in Africa by conducting joint research with overseas research institutions. On the other hand, JICA cooperation has focused on applied research, including polio vaccine potency testing, the development of blood test kits, and so on, which has directly led to the enhancement of infectious diseases control. Moreover, each institute conducts research based on needs derived from health policies, and the results of research are applied by administrative services through annual meetings with their respective Ministries of Health and through regular reporting to these ministries.

The three research institutes are expected to continue to conduct basic and applied research based on the needs derived from health policies. The research should be strengthened in the following areas.

- Practical applied research in priority areas
- Research on emerging / re-emerging infectious diseases and parasitic diseases
- Research on infectious diseases control based on regional characteristics through operational research in order to develop preventive methods and medical cures in Africa
- Operational research through participatory approaches in order to increase the effects of infectious diseases control

In addition to infectious diseases research, practical research that is reflected in infectious disease control and which supports national health plans has been implemented. For example, epidemiological surveys, the development of diagnostic

methods and test kits, treatment methods, including vaccines, are just some examples of the work that has been carried out.

### (2) Reference Laboratory/ Surveillance Tasks

Each institute utilises advanced diagnostic techniques and assists the Ministry of Health in collecting epidemiological information. As for infectious diseases surveillance by the health ministries, the three research institutes play an important role in quality control for subordinate testing institutions. In future, they are expected to provide technical advice for the health ministries based on the diagnostic findings and diagnoses of specimens sent regularly from subordinate testing institutions in their respective countries, or in surrounding countries that are unable to diagnose the specimens themselves.

Moreover, each research institute provided health services not only within the country, but also for the surrounding countries. In addition, it is important for them to promote assistance to neighbouring countries in terms of strengthening the functions of reference and surveillance. It is necessary to strengthen diagnostic functions in terms of following objectives.

- To strengthen the establishment and expansion of the epidemiological database and information transmission capacity on HIV/AIDS and emerging / re-emerging infectious diseases
- To participate in epidemiological surveys conducted by the government as representative surveillance institutions in the countries and to strengthen quality control for subordinate testing institutions
- To introduce advanced infectious disease testing and diagnosis techniques and to strengthen dissemination of these technique to related domestic medical institutions
- To strengthen infectious diseases control within the region by providing reference services to surrounding countries that do not have sufficient diagnostic techniques

### (3) Human Resources Development

The three research institutes are engaged in educational activities through their affiliations as research institutes to the University of Ghana and Zambia University (NMIMR, and the UTH Virology Laboratory and Tuberculosis Laboratory) and as joint operator of the Institute of Tropical Medicine and Infectious Diseases with Jomo Kenyatta University of Agriculture and Technology (KEMRI). In addition, they conduct technical training for medical personnel and play an important role as institutes for human resources development. In particular, the NMIMR and KEMRI conduct third country training for medical personnel from the surrounding countries. In this training, they provide technical advice to subordinate testing institutions in order to ensure the smooth conduct of surveillance services by the Ministries of Health, which forms a contribution to the execution of infectious diseases control. Human resources development activities should be continued in relation to the following aspects in future.

- Development of medical researchers in the region by conducting research on infectious diseases control
- Contribution to human resources development in the field of medicine for the next generation by providing medical education and opportunities for research on infectious diseases for graduate and undergraduate students from home and abroad
- Strengthening infectious diseases control through technical transfers in third country training for medical personnel from the surrounding countries as a basis for JICA cooperation in the region

### 7.3 Recommendations on the Effective Use of Each Research Institute

Japan has provided continuous technical cooperation to the NMIMR, the KEMRI, and the UTH Virology and Tuberculosis Laboratories since their establishment over a period of 10 to 30 years. All three institutes have generated a synergistic effect stemming from technology transfers and the establishment of a research base, and they have grown to become research institutes representative of Africa. Presently, all are involved in joint research activities with research institutes in advanced countries and they have become focal points for medical research in Africa. On the other hand, in view of the fact that cooperation between the three research institutes is proceeding to the next stage, JICA should consider the validity of cooperation with the aim of technology transfer.

In the following, the orientation of cooperation with the research institutes is discussed in the form of recommendations based on the evaluation analysis.

#### (1) Joint Research

It was recognized that the three research institutes that were targeted in this evaluation study had already become leading research institutes in Africa. All three institutes are involved in joint research activities with overseas research institutions and function as WHO collaboration centres and reference laboratories. In addition, all three institutes have become self-sufficient in their activities.

JICA has implemented technical cooperation for the purpose of enhancing the research capacity of the institutes, which has been sufficiently fulfilled. For the future, there should be an examination of how to utilize the research capacity of these research institutes as development partners in the field of medicine and health in Africa. In African countries, health projects for the purpose of the examination of the effectiveness of surveillance and medical cures can be executed efficiently and effectively by entrusting it to research institutes that are familiar with local conditions.

Moreover, each research institute provides technical advice to the health ministries as a member of health committees and programmes organized by the governments. Through the strengthening of this relationship, there should be an examination of ways to more directly reflect the results of technical cooperation by JICA in infectious diseases control.

In addition, a great number of experts have been dispatched to each of the research institutes from universities and research institutions in Japan for periods of long term

JICA cooperation. At the same time, the above-mentioned institutions in Japan have hosted researchers from the target research institutes, which has deepened interaction between research institutes in Japan and Africa. In future, when JICA designates these institutes as counterparts, it is desirable that assistance measures adopt a policy aimed at fostering ownership by the other party in order to strengthen the self-reliance of each institution. It is also desirable that Japanese universities and government research institutions develop partnerships with these institutes in view of the ties that each institute has cultivated with Japan through JICA projects and to implement joint research activities on an equal basis.

On the other hand, each research institute is expected to utilize its capacity from the standpoint of the broad perspective of enhancing public heath by proactively participating in research projects implemented not only JICA, but also other foreign aid agencies.

### (2) Cooperation to Maintain their Functions as Reference Laboratories

The functions of the research institutes as reference laboratories have contributed greatly to promoting EPI diseases control and ART. In particular, the role of the UTH Virology and Tuberculosis Laboratories as HIV reference laboratories is anticipated to become even more important since Zambia adopted the WHO/USAID 3X5 Initiative.

Meanwhile, it is important that each research institute participate in survey activities implemented by their respective health ministries and WHO aimed at improving the health sector and for their testing and diagnostic capabilities to be effectively utilized.

It is desirable for JICA to review the requirements of these institutes and to provide assistance in terms of maintaining the research facilities and human capacity development for renewing the facilities and equipment as needed.

### (3) Utilization as Research Institutes

Each research institute is involved in implementing third country training activities in their respective countries, in addition to training activities required by the health ministries and other related institutions. Their capabilities should be adequately utilized as training facilities.

An issue that must be reviewed in future is how JICA will utilize the training functions of the NMIMR, the KEMRI, and the UTH Virology and Tuberculosis Laboratories. Possibilities include utilizing these institutes as training facilities for health projects implemented in other African countries, as support for training activities carried out independently by each institute, or consigning third country training activities to each institute as part of South-South Cooperation.

In the area of third country training activities, assistance can be provided to promote jointly implemented research activities between each institute and overseas research institutions as in the case of NMIMR, where third country training activities in EPI diseases were jointly implemented with the WHO.

On the other hand, Japanese research institutes and universities can also utilize the research institutes as a training facility for Japanese health personnel. As Japan is located in a temperate zone, it has environmental limitations with regard to its study of

tropical diseases. With JICA assistance, Japanese students and young researchers can utilize these three research institutes, which have established deep ties with Japan. An effective approach is also to develop further exchanges between Japan and African countries in the medical research field in order to promote infectious diseases research in Japan.

### (4) Strengthen Regional Networks

JICA regards these institutes as bases for infectious diseases control in their respective regions; NMIMR for the West African region, KEMRI for the East African region, and the UTH for the Southern African region. JICA has implemented cooperation for infectious diseases control based on this regional division and all of the research institutes targeted in this study have been designated as WHO reference laboratories and collaborating centres and support infectious diseases control for each of their governments and regions.

In the future, after the regional networks based on the three research institutes have become established, it is desirable to promote the dispatch of third country experts and south-south cooperation. From now on, the mainstream form of cooperation in the field of health is expected to be support to ART and participatory approaches to regional public health. There should be an examination of how to promote cooperation effectively by utilising the personnel who have research experience in the three research institutes.

JICA has been implementing long term cooperation in terms of technical transfer and facility development since the establishment of the research institutes. It has been verified through the evaluation survey that as a result of JICA cooperation, each institute is acknowledged internationally as a centre for research in the health and medical fields and has sufficient research capabilities. From now on, JICA is expected to examine the orientation of its cooperation with these research institutes in order to more effectively contribute to infectious diseases control in the Africa region through proactive engagement with the research institutes.

# External Review by Intellectuals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# Proposals for Future Aid Modalities in Infectious Disease Control Based on the Findings of the Evaluation on Infectious Disease Research Institutes in Kenya, Zambia and Ghana

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The Japan International Cooperation Agency (JICA) has sent two evaluation missions to three research institutions in Kenya, Zambia and Ghana as part of its integrated evaluation program. As a member of both missions, I had the impression that JICA had contributed greatly in such aspects as technology transfer that involved facilities, equipment and materials, and human resources development. When JICA started to provide aid to these three institutions 15 to 25 years ago, they were all but nothing in the field of virology. The missions learned that the institutions were given high marks by WHO and other UN organizations, health ministries and other government offices concerned in their respective countries, and health-related organizations of the donor countries. Such a high evaluation was shared by the missions themselves.

The globalization of infectious diseases and the rise of emerging infectious diseases which are zoonotic in origin are increasingly associated with the tropical regions including Africa. Attention is now paid to the need for surveillance and control of infectious diseases in these regions. Other recent developments include the modernization of research methods and the diversification of measures to control infection disease. Given these developments, it is about time that JICA reviewed the modalities and directions of its research assistance to Africa, although it must continue to address the health sector and have the perspective of public health.

Research assistance in infectious disease control should be centered on infectious disease epidemiology, which provides a basis for infectious disease control. When even an emerging infectious disease, not to mention existing infectious diseases, breaks out, infectious disease epidemiology makes it possible for the government to develop an optimal program to conquer or control the disease and for research institutions to provide data based on laboratory diagnosis for crisis management purposes. In that sense, the importance of the laboratory-based aid scheme is expected to increase more than ever.

JICA has continued to support the three institutions as key entities for infectious disease research in their respective countries. As a result, they now have highly skilled staff and state-of-the-art equipment. Specifically, JICA's technical cooperation has a track record of focusing on laboratory diagnosis--a key to combating polio and HIV/AIDS. Such a track record is highly evaluated as a unique one different from those of the western donors. As these institutions performed well over the years, they received an increasing number of requests for joint research from counterparts in western countries and UN organizations. This was reflected in the increasing percentages of joint research revenues in their total budgets. In contrast, the percentages of JICA's financial assistance fell in relative terms. Japan was

increasingly perceived as a participant in joint research. The image of Japan as a provider of aid in research was diminished.

Other entities in the Japanese donor community have recently set out their policy of supporting in infectious disease research in developing countries in Africa and other tropical regions. Among such entities are the Ministry of Health, Labour and Welfare and not least the Ministry of Education, Culture, Sports, Science and Technology. These recent developments provide more opportunities than ever for ministries to support research activities abroad. Yet such opportunities are limited in terms of research support funds. This is where JICA can come into play. The agency is in a position to provide advanced and large equipment and facilities that fit modern research methods. In fact, what these ministries are doing is largely the extension of JICA's past activities in infectious disease control. For them, venturing into countries where JICA has not laid the groundwork may be a formidable task.

In light of the findings of the evaluation, how should JICA deliver aid from now? For one thing, JICA may be able to continue with the rather unique approach it took for Zambia--an approach designed to support from the very beginning, that is, the construction of a small laboratory, and continue to provide small-scale and focused aid for research activity--if a small developing country requests aid in infectious disease control from Japan. In that case, a technical cooperation project should be designed to have a direct impact on infectious disease control and it should see the construction of a laboratory as a means, not an end itself. Such a project should also respect the perspective of public health as discussed above and take the evaluation process into account. In addition, partnership with local communities as discussed below is a viable option. Other options worth considering include the upgrading of the third country training program using the three institutions and the invitation of more junior researchers to Japan for training as part of technology transfer and human resources development.

There is an alternative approach to infectious disease control other than the laboratory-oriented approach that has been discussed above. That is the community-based approach. This participatory approach, which stresses coordination with community activities, is attracting attention because of two major background factors. First, it is becoming clear that efforts by the government sector alone are insufficient in controlling infectious diseases. The second factor is a brain drain. The lack of health care providers is a serious problem in developing countries.

Although it is based on public health, the community-based approach can address many other aspects, including: agriculture in the context of malnutrition, the economy in the context of poverty, civil engineering in the context of environmental sanitation and patient transportation, and school education in the context of hygiene education and other information campaigns. This multifaceted approach is designed to accommodate community needs. In that sense, it is parallel to primary health care, which stress the sustainable participation and autonomy of the local community.

The community-based approach can also support operational research based on scientific evidence, which has been already practiced in Japan. Operational research offers, and is actually offering, new areas of activity for JICA. In fact, JICA is phasing in operational research in Zambia, where the geographic information system (GIS) is providing valuable data for project planning and evaluation.

# Infectious disease testing and research institutions built in Africa with Japan's ODA

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As part of Japan's official development assistance (ODA), the Japan International Cooperation Agency (JICA) has to date built medical-related facilities in many developing countries, including hospitals, testing and research institutions and vaccine production facilities. Of these medical-related facilities, three testing and research institutions of infectious diseases in Africa have recently been inspected as part of JICA's evaluation program. They are: the Noguchi Memorial Institute for Medical Research, University of Ghana (NMIMR), which was established in 1986; the Kenyan Medical Research Institute (KEMRI), with which Japan has maintained long-term relationship since 1979; and the virology and TB laboratories, Zambia University Teaching Hospital (UTH).

It should be noted that these institutions are completely different from universities and research institutions Japan established in Taiwan, Korea and Manchuria for colonial purposes before WWII. The former have been constructed with Japan's ODA, which supports self-help efforts by developing countries as part of the country's initiative to support peace and development of the international community. The latter were designed to provide protection for Japanese settlers and impose Japanese systems on these areas. Western countries also once built such institutions as part of their colonial management.

Research activity--intellectual activity to study things and phenomena scientifically--requires social overhead capital, which encompasses education and economic surplus. Developing countries that wish to have research institutions may fulfill their wishes with development aid, but may have difficulty in operating and maintaining them on their own. These three institutions inspected are now pursing their own way as institutions affiliated to universities or governments after completing the primary phase of a series of JICA's development projects. It is safe to say that the fact-finding inspection was about self-help on the part of these recipient institutions.

JICA is judged to have delivered proper aid, if these institutions are working properly, although that is the result of their self-help efforts. If they are having problems and failing to work properly, it may be inappropriate for JICA to blame the recipients. Rather, JICA might be held accountable for such a failure and a waste of long-term efforts by those involved. In addition, JICA might have to apologize to the Japanese people for the waste of taxpayers' money.

## Infectious disease testing and research institutions

Infectious disease is caused by pathogens, including microorganisms and parasites. Pathogens are diverse, and so are infection routes. Although some infectious diseases such as tetanus may not be spread to other people, other infectious diseases such as influenza may

become rampant. Fears of the outbreak of an infectious disease and the occurrence of an infectious disease of unknown etiology cause social unrest. Infectious diseases may also bring about huge economic losses.

Efforts to control infectious diseases should be made at national and international levels. Controlling infectious diseases and dispelling fears for them require establishing the methods of diagnosing, treating and preventing them. Government control of social and daily activities may be necessary to prevent them from spreading. In addition, governments need to develop hospital and other medical facilities, testing and research institutions, the administrative structure and legal framework to vaccinate people.

In general, the duties of infectious disease testing and research institutions include: analytical research on pathogens, pathogeneses and protection mechanisms; development research on diagnosis methods, vaccines and therapeutic drug; diagnostic work, including the separation and identification of pathogens and serologic testing; field surveys on diseases and pathogens; quality control of vaccines, antisera, antibacterial drugs, antiviral drugs and in-vitro diagnostic agents; clinical diagnosis; and therapeutic research. The three institutions are testing and research institutions that play a pivotal role in their respective countries. Yet central institutions for infectious disease research are also required to undertake tests on behalf of domestic testing institutions and provide policy advice, as well as recommendations when asked, to governments based on scientific evidence.

Such central institutions vary in scale and type from country to country. The United States has big three central institutions: the National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), and the Food and Drug Administration (FDA). NIH is tasked with basic and development research, CDC with special diagnosis and field survey, and FDA with quality control. Clinical and therapeutic research is conducted by NIH and teaching hospital. In Japan, the central institution for infectious disease research is the National Institute of Infectious Diseases (NIID). NIID takes charge of basic and development research, quality control and surveillance. The needs for special diagnosis and surveys are addressed by the NIID network involving local institutes of public health. NIID is dwarfed by the U.S. big three institutions, as university research institutions have traditionally dominated the field of basic and development research and still play the central role in this field in Japan.

Japan's testing and research institutions for infectious diseases may date back to the Institute for Infectious Disease (IID), which was established in 1892 and headed by Dr. Shibasaburo Kitasato under the jurisdiction of the Ministry of Home Affairs. As Dr. Kitasato was not on good terms with the ministry, IID was later placed under the control of the Ministry of Education and became affiliated with Tokyo Imperial University (now the University of Tokyo). Dr. Kitasato himself left IID and established his own research institute. IID then developed as the central research institution of infectious disease. In its pre-war prime, the institute was a large organization whose operations ranged from basic and development research to clinical diagnosis and therapeutic research and to the production and quality control of vaccines and serum products. It even had a teaching hospital for clinical diagnosis and therapeutic research. After WWII, under the direction of the occupied forces, IID was dissolved and reorganized into the National Institute of Preventive Medicine (NIPM) under the control of the Ministry of Health and Welfare, with its original function of quality control of biologics relinquished. NIPM and the National Institute for Leprosy Research were combined to form the National Institute of Infectious Diseases.

Although the testing and research institutions inspected by the evaluators play central roles in testing and research of infectious diseases in their respective countries, they remained university affiliated institutions except for KEMRI; NMIMR is a research institution affiliated with the University of Ghana and the virology and TB laboratories are testing facilities affiliated with the University Teaching Hospital (UTH). As the case of Japan mentioned above suggests, however, central institutions in charge of testing and research of infectious diseases may well take a form that fits to the development stage of each developing country. What matters is that they fulfill their duties as central institutions discussed above and such performance is recognized at the national and international levels.

**Importance of central testing and research institutions of infectious diseases**

Rapid progress in science and technology in the 20th century benefited human beings, especially in the field of infectious disease control. Incidences of infectious diseases were sharply reduced in the world by both direct and indirect factors. The main direct factor was the development of antibiotics, prophylactic vaccines and other strong anti-disease agents. The indirect factors included: improvements in public health mainly thanks to sanitary water supply and sewer services; improvements in storage stability of foods and drugs with the development of cold storage equipment; advances in medical technology; the spread of the knowledge about sanitation through education and mass media; better communication with the development of telecommunications; dietary improvements; and legal framework development. A case in point was the global eradication of smallpox by the international initiative led by the World Health Organization (WHO). This epoch-making event caused many to believe that war on infectious disease all but over.

Yet infectious disease is a hard fight between two different forms of life--human beings versus pathogens. In fact, it is an endless fight. The end of the 20th century has seen the rise of a number of infectious diseases, including emerging infectious diseases such as AIDS and SARS, reemerging infectious diseases such as malaria and tuberculosis, infections with antibiotic-resistant microorganisms such as MRSA, and zoonoses such as infections with enterohemorrhagic E. Coli. It is predicted that global warming increases incidences of malaria, dengue fever and other diseases transmitted by mosquitoes living in warm-temperature regions. The problem of infectious diseases at natural disaster areas and refugee camps is likely to become even more serious, as climate changes associated with global warming will trigger more floods and other natural disasters, and unabated civil wars and struggles in many parts of the world will continue to bring about large numbers of refugees.

Industrialized countries have solved many problems in rather short periods of time in their fight against infectious disease, largely thanks to research networks they developed with central research institutions of infectious diseases at their cores. These countries have achieved a measure of success in controlling infectious diseases that are not fully controllable. In contrast, the situation in developing countries is becoming even more serious. The infectious disease problem, like other problems, is difficult to solve unless causes, triggers and contributing factors are identified and addressed on the ground.

This is why central institutions for testing and research of infectious diseases are necessary in developing countries than anywhere else. Tasked with providing advice, recommendations and answers to inquiries based on scientific evidence, such a central institution provides a useful tool to help people suffering from infectious diseases within the nation. It can do more than that. A central institution can join global networks for testing and research of infectious

diseases centering on WHO and other international institutions, and contribute to promoting the health of people in the world.

It should be remembered, however, that establishing research institutions in developing countries is a formidable challenge. For one thing, many of the developing countries lack human resources that support research institutions. Be it higher education in medicine and biology or not, it is often the case that the better researchers have performed in school, the poorer they are at laboratory work, although they are good at learning from textbooks. In the worst case, a researcher who has taken a high position without receiving laboratory training from a competent instructor may not be able to conduct laboratory work for fear of making mistakes. Japanese researchers are generally willing to perform laboratory work. Such an attitude at research institutions that they are assigned to may or may not serve as a role model for local researchers, who may be impressed but not motivated to work on their own.

Japanese researchers in infectious disease control must have taken great pains to support the testing and research institutions from their inception until they got off the ground. Their efforts led to the development of competent human resources there. Together with advanced equipment provided by Japan, these institutions seem to be highly appreciated at home and abroad. They have WHO recognition as infectious disease laboratories and are even designated as its partner laboratories. It is my hope that many Japanese researchers go to these institutions for joint research with local researchers, as the institutions have been built with Japan's aid in regions prone to infectious diseases.

# Comments on the Thematic Evaluation on Communicable Disease Control in Africa

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This thematic evaluation report focuses on the Noguchi Memorial Institute for Medical Research of the University of Ghana (NMIMR), the Kenyan Medical Research Institute (KEMRI) and the Zambia University Teaching Hospital (UTH), as case studies of research institutions for which Japan has provided technical assistance in infectious disease control in Africa. Assistance to these institutions constitutes a key component of JICA's health programs in the region.

The thematic evaluation covers typical technology transfer projects to recipient institutions for the Japan International Cooperation Agency (JICA). Interestingly, however, it is not limited to the evaluation of individual institutions or projects: it also has wider implications for and recommendations on technical cooperation to research institutions in general. Moreover, the report provides useful suggestions as to the evaluation processes, including highlighting chronological developments in research institutions and JICA's assistance to them, developing a model for roles and functions of these institutions, and establishing an analysis framework for evaluation.

Comments are made on the following three aspects.

## 1. The importance of highlighting chronological developments in the project in evaluation

This evaluation has paid close attention to the chronological developments in the research institutions, which have undergone progressive changes over the years. Such changes largely dictate the roles and development of the JICA's technical cooperation projects themselves. It is important to evaluate JICA's projects in the context of such developments in the research institutions concerned. In this evaluation, efforts have been made to appropriately keep track of such institutional changes and place the JICA's projects in the context of these changes.

The evaluation has made it clear that JICA has had a great influence on the research institutions from their establishment. Of them, NMIMR and KEMRI have been established with JICA assistance, with grant aid as well as technical cooperation from Japan used for their facility development. UTH has also expanded its facilities and equipment using facility development funds for JICA's technical cooperation. The evaluation has also noted that the scale and role of JICA assistance have gradually declined over the years.

The evaluation has followed changes in JICA's assistance in line with the development process of the research institutions and appropriately kept track of the roles played by JICA's assistance, highlighting JICA approach that has focused on individual projects for each institution. In general, an organization sets out its policy and strategy more clearly as it develops. Under such clearly defined policy and strategy, an organization tends to launch

individual programs and projects for its development. The evaluation provides a clear picture that in the context of such a development process of an organization, JICA has shifted its focus from policies and strategies to individual programs and projects.

## 2. The establishment of a functional model and the applicability of program evaluation

Based on the findings of their review of the functional aspect of research institutions for infectious disease control in Japan, the U.S. and the U.K., the evaluators have established a functional model for such institutions in general and used this model as an analysis framework in the evaluation processes. Establishing such a framework has enabled the evaluators to characterize each of the three institutions in the context of infectious disease control, identify its functions and roles, and place the evaluated projects into perspective.

Although this was not the first time the relevant JICA projects have been evaluated, it was not until the evaluation this time around that these projects, as well as the institutions involved, were properly evaluated. Past evaluations on these projects failed to clearly define the functions and roles of these institutions and focused solely on the projects themselves. The lack of understanding of these functions and roles led to inappropriate analysis of the roles of these projects themselves, resulting in these projects being under-evaluated in many cases.

Such a clear definition of the functions and roles of the research institutions concerned may give rise to the possibility of regarding these JICA projects as part of a wider program for infectious disease control. Ghana, Kenya and Zambia have come to have more feasible health strategy planning than ever before. With more clearly defined policies and measures, these countries increasingly emphasize the program approach. In other words, they consider it important to place each aid project in a proper context. This evaluation accommodates such recent developments in these three countries. In fact, the clear definition of the functions and functions of the research institutions involved did provide an opportunity to cast JICA projects as part of a program.

## 3. The need for stressing outcomes and reviewing the aid approach

The evaluation report is short on the need for reviewing the approach of supporting the research institutions involved in terms of its outcomes and outputs. Such review is largely in parallel with the need for a transition from the project approach to the program approach.

JICA's projects to provide assistance to research institutions like the ones covered in this evaluation are often aimed at helping them gain substantial ability to conduct research on their own. The conventional wisdom within JICA seems to be that once a research institution gains such ability, the need for technical cooperation is fulfilled and the relevant project(s) should be terminated. (Such an approach is in contrast to approaches of other donor agencies and relevant institutions where they increase aid as the recipient research institutions improve their research ability.)

Such an approach in technical cooperation, however, is open to question in terms of its appropriateness. According to the program theory, the capacity to conduct research only represents the capacity to produce outputs, not the capacity to produce outcomes--changes in the target group or by extension, a society as a whole. JICA usually terminates its aid projects for research institutions once they create an environment conducive to producing outcomes.

Today, there are strong calls for development assistance to produce outcomes. In response, the donor community in the world is largely shifting its focus from outputs to outcomes. The community may not consider that an aid project for a research institution has achieved its objectives until the findings of research by the institution are put to good use for government policies, programs and projects to produce changes in the target group and possibly the society to which the group belongs.

If JICA is to seek to produce such outcomes, it should not be satisfied with a recipient research institution gaining research capacity. It is important for JICA to see to it that the institution takes advantage of its increased capacity and resources to conduct research and influence government policies and programs with its findings, bringing about changes in the target group and the society to which the group belongs. JICA is advised to pursue assistance that produces positive changes in a society by making the most of the resources of recipient research institutions, as well as those of itself and other aid agencies of Japan.

To that end, it is necessary to make a shift in aid approach--from the output-oriented approach designed to improve the research capacity of the recipient institution to the outcome-oriented approach designed to improve the capacity of the institution to take advantage of its research findings to provide policy advice to the government and influence its policy-making process. The outcome-oriented approach, or the program-based aid approach, provides a basis for the recipient institution to have a wider social impact.

# External Review by Intellectuals from the Target Countries

## Ghana

### Dr. Anthony T. Seddoh

Head, Policy and Health Systems Development Unit, Ghana Health Service, which is an implementation body for public health services under the Ministry of Health in Ghana. He has been engaged in policy planning and monitoring evaluation in the Ghana Health Service and has worked on the WHO African Region Country Cooperation Strategy, the Ghana Poverty Reduction Strategy – the Health Sector Component (commissioned by the UNDP), and so on. The contribution of the Noguchi Memorial Institute for Medical Research under the Ministry of Education has been analyzed from its position as an implementation entity for public health services.

## Zambia

### Mr. Stephen L. Muyakwa

He is a member of the Zambia Evaluation Association. With expertise in Institution Building/Organisation Development and Socio- economic aspects of HIV/ AIDS, he has been engaged in policy reports on the baseline assessment for HIV/AIDS and the Zambia Integrated Health Programme (ZIHP).

# Report of the thematic evaluation on Communicable Disease Control in Africa

Prepared by:
Anthony Theophilus Seddoh

This report is prepared by Dr. A. T. Seddoh, as a result of a thematic evaluation of Noguchi Memorial Institute for Medical Research (NMIMR) from 9th – 25th September 2004. Dr. Seddoh participated as an independent third party evaluator to JICA. The purpose is to present the key findings, challenges and lessons learnt to assist the JICA office to evaluate:

- The impact of NMIMR's activities on the population with respect to communicable disease control including administration, training and dissemination of information
- The current roles and functions of NMIMR's since its establishment vis-à-vis the vision for the future with regard to communicable disease control

## Key Findings

### 1. The administrative mandate, roles and functions of NMIMR

Noguchi Memorial Institute for Medical Research (NMIMR) is a semi-autonomous research based academic institution under the University of Ghana, Ministry of Education. The establishment of the NMIMR in 1979 is seen as the physical manifestation of the collaboration between Ghana and Japan in promoting evidence-based health care development, that begun with Hideyo Noguchi since 1928. The institute had the mandate to (i) conduct research into infections and communicable diseases and nutritional problems (ii) provide training opportunities for post-graduate training in medical research and (iii) to provide specialised laboratory and diagnostic monitoring services to improve public health. Over the years, a number of projects have been executed by NMIMR with support through JICA:

| | | |
|---|---|---|
| 1986 | - | NMIMR phase I project |
| 1991-1997 | - | NMIMR phase II project |
| 1999-2003 | - | Infectious Diseases Project |
| 2004- | - | West African Centre for International Parasite Control |

Key researches conducted among others within and in addition to the project areas are tuberculosis, HIV/AIDS/STIs, viral haemorrhagic fevers, measles, malaria, schistosomiasis, maternal mortality analysis, intestinal helminths, leishmaniasis and filariasis.

### The capacity of NMIMR

The laboratories are highly equipped with facilities for molecular, biological, immunological (including flow cytometry), biochemical and haematological research. It also has an electron microscopy. The institute is also staffed with high calibre scientific personnel with most of them holding post-graduate qualifications in their various fields of expertise. The capabilities acquired and the extended expertise has enabled NMIMR to undertake the following activities to international standard:

- Delineate the epidemiology and pathogenesis of HIV/AIDS, STDs, and vaccine preventable diseases and thus contribute to vaccine development

- Laboratory research for tuberculosis and drug efficacy testing
- The training of laboratory and research fellows in medical and public health up to the highest post-graduate level in their areas of activities

In recent times, the institute has added to its portfolio, research into non-communicable diseases in response to the increasing incidence and significance of hypertension, diabetes and anaemia on public health in Ghana.

## 2. Training

NMIMR has been able to train as part of its project activities, personnel mostly laboratory technicians in basic parasitology, TB microscopy, quality assurance and basic bacteriology in general and as related to STIs. It has also creditably performed the required 25% of duty hours to teaching required of its senior staff to the University of Ghana resulting in the direct and indirect production of graduate, masters and doctoral level professionals.

## 3. The impact of NMIMR on policy development, diagnosis and treatment practices

The relationship between the NMIMR, the Ghana Health Service and its National Public Health Reference Laboratory (NPHRL) is very positive. There is however no formal or administrative relationship between NMIMR and the GHS/NPHRL. The NPHRL and its sub-units, the Zonal PHRL is the government's lead laboratory in diagnostics and not research. Its capabilities are limited to bacteriological investigations and an almost rudimentary capacity for viral case detection. NMIMR functionally fills the gap as a leading medical research institute of great repute with capacity for virology investigations and cutting-edge research. This positioning by NMIMR has lead to it becoming a centre of last resort in medical and pharmaceutical investigations, diagnosis, treatment, policy development and research in Ghana and the sub-region. The institute takes lead in medical investigations with regard to HIV/AIDS, yellow fever, measles, general vaccine preventable diseases and microbial quality monitoring for nutrition and food security. The studies into yellow fever for instance lead to the change of the international regime to accept that yellow fever vaccine can effectively be given in concert with other EPI vaccines. NMIMR was also actively involved in the development of population dynamics statistics under the Demographic and Health Surveys in Ghana. The institute also assume the following responsibilities among several others:

- Serves as the main virology centre and the national reference laboratory for TB control, HIV/AIDS and STIs and vaccine preventable diseases
- Undertook the research into chloroquine resistance that lead to the change in the country's anti-malaria drug policy in 2003 and are managing the change over to an artemisinin-based combination therapy
- Effectively supports studies into the effective use of ITNs in Ghana and its monitoring
- Is currently the WHO Collaborating Centre for Polio in the sub-region and does all the vaccine potency tests for Ghana and Togo
- Undertakes the mandatory testing of anti-snake serums imported into the country

## 4. WACIPAC

The test of versatility of NMIMR to combine a purely laboratory based scientific research orientation with an operations community focused program of research came with the advent of the West African Centre for International Parasite Control (WACIPAC). The project has proven to be the much needed bridge between the institute and the population at a local

government level. Through WACIPAC, NMIMR has shared expertise with the population and some African Countries in operations research for parasitic disease control and trained their personnel for parasitic disease control programs. This 'third country training' program appears to have a high regard in the GHS and Ministry of Education, Youth and Sports (MOEYS) as a program worth sustaining. The impact on revitalising a slumbering school health program using the WACIPAC has been tremendous. The MOEYS and the GHS have indicated their intention to scale-up the project implementation across the whole country. All donor partners consider this program a worthwhile project even though they do not necessarily agree with the coordinating mechanisms.

## 5. Dissemination

Most of the findings of NMIMR activities have been published or are in the process to be published in both local and international journals. Annual three day dissemination seminars have also been instituted by NMIMR with the theme 'Bridging the research-policy divide'. Different presentations are made at these meetings with the aim of sharing research findings with policy makers and peers in academia. The outcome of these meetings has led to policy reviews that have no doubt contributed to addressing the health needs of the population.

## 6. The future role of Noguchi in disease control

There is a functional rather than an administrative role for Noguchi in disease control in Ghana. Indeed, the evaluation shows that the NMIMR functional priority areas – communicable and non-communicable diseases - are closely related to the core of programs implemented in the Ghana Health Sector and the African region and is likely to increase the demand of their services for a long time to come. The demand from the health sector is likely to continue to be diagnostic support and research to promote prevention, case containment and eradication activities.

The functions in supporting non-communicable disease research also provides a good orientation for NMIMR to help Ghana and countries in the region to address key issues regarding health and the environment, health and poverty and sustainable development within the framework of poverty alleviation strategies and activities of partners. The emphasis on policy advice and advocacy is appropriate as it focuses more on how best to support countries to deliver services. In effect, there is a unique opportunity for NMIMR to continue to use its comparative advantage in virology and technical competency to assist Ghana and countries in the sub-region in infectious disease control.

The WACIPAC project is a very positive development. However it cannot be considered that this is an area that NMIMR has the needed competency. This area is a social science related field. It may therefore be more appropriate for NMIMR to relinquish their role in WACIPAC to the field research centres in Navrongo, Dodowa or Kintampo or indeed the Health Research Unit who have the competency and capacity for this.

## 7. Challenges

NMIMR is an important institution with a unique competency that will be required for the advancement of health care in the region. The main challenge however to the institute is funding and staffing. The Ministry of Education, Youth and Sports, who confirms this difficulty that the institute has, put it down to competing needs. To this end, donor and

partner collaboration is inevitable to its survival and continuing viability. Currently, aside of JICA and a limited bilateral cooperation with the US Navy in anti-malaria drug research, no other donor agency appears to have any significant direct funding support to the institute. This situation is unlikely to change soon as most of the additional funding is through competitive tendering via proposal submission by the institute.

# REPORT OF FINDINGS ON THE THEMATIC EVALUATION ON COMMUNICABLE DISEASE CONTROL IN ZAMBIA

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Date: 24th September 2004.

Contents

## 1.0 Purpose of the Study

The purpose of this thematic evaluation is to verify the achievements of the technical cooperation interventions by JICA in Zambia to medical research institutes, and its impacts on communicable disease control on the population generally and in the medical and health sectors.

## 2.0 Scope of the Evaluation

The scope of the evaluation of the external evaluators is as follows.

a) To evaluate achievements of Japanese representative projects on communicable disease control in Zambia in terms of the roles and functions curried out by research institutes ever since their establishment in comparison with the expected roles and functions of the research institutes in communicable disease control

b) To verify the impact of the cooperation on the population and administrative systems in Zambia and surrounding countries through the cooperation including personnel training, and dissemination of information on communicable disease control.

## 3.0 Methodology

The evaluation utilised the following evaluation tools:

a) Literature review. Literature in the custody of JICA, UTH and other institutions was closely reviewed to determine the achievements and impacts of the HIV/ AIDS and TB project.
b) Key informant interviews. The senior staff at the UTH, CBoH, NAC and international organisations such as UNDP and WHO were interviewed. The list of interviewees is attached to this report.
c) Groups discussions. A group of senior staff at the virology laboratory held discussions with the research team.

## 4.0 Background

### 4.1 Socio-economic Context

Zambia is a sub- Saharan country in southern Africa with a population of 9.9 million. The population growth rate is quite high and exceeds 2%. The latest population census was conducted in 2000. Educational attainment is relatively high by African standards with an adult literacy rate at 75.% and gross primary school enrolment at 72.4%. There is a growing issue of malnutrition, however, and more than 40% of children under five are stunted.

Zambia's per capita GNP is now below the average for Sub-Saharan Africa and was at $490 in 19990-96. Data from the Zambia Central Statistics Office indicates that nearly 70 per cent of Zambians fell below the poverty line in 1996. Further more, Zambia's debt burden remains astronomically high at $6.5 billion.

The debt service consumes a significant portion of government expenditures, equalling to 69% of the entire budget for all sectors combined. A recent analysis concluded that Zambia's external public debt would remain high at unsustainable

levels for many years to come. Therefore, budget reform and restructuring, including the decisions to seek exceptional debt relief under the Heavily Indebted Poor Countries (HIPC) initiative and to explore alternative debt swap mechanisms, are considered essential for the Government overall ability to mount an effective and sustainable response to the current HIV/AIDS and TB pandemic.

Instability of the major macroeconomic indicators such as inflation, unemployment rate, dollar-Kwacha exchange rate would seriously affect the amount of resources available for health sector development, which is already severely constrained. The national health expenditure per capita in Zambia is estimated to be at US $10.5 in 2000. It is not sufficient even to provide the most essential health care package at district level which requires US $ 11.5 per capita.

The socio-economic context suggests the preponderance of conditions inimical to the effective prevention and control of HIV/AIDS and TB in Zambia. If new resources are not found, the decline in available public resources for HIV/AIDS and TB control may severely undermine the government's ability to amount a timely and effective response.

## 4.4 The Health Sector in Zambia

The health sector in Zambia is currently facing a crisis. Mortality rate is quite high with IMR at 109/1,000 and U5MR at 197/1,000 in 1992-96, and they are increasing since the mid 1980s. The burden of diseases is also increasing, while the national resources to combat the problems is shrinking. It is considered that the promotion of the health reforms is the only way for the Zambian health sector to revive.

The HIV/AIDS pandemic and coincidental TB resurgence are two of the most serious risks which are threatening the health of the Zambian population. The decentralization of the health service delivery system is being promoted at the moment. It is, however, essential that disease control strategy and operation which are integrated with the decentralised system are also developed. For that purpose, the roles and functions of central level organisations and local organisations need to be clearly defined, and effective coordination mechanisms among those organisations need to be established.

The capacity of the frontline organisations, i.e., District Health Management Teams, District Hospitals (First Referral Hospitals) and Health Centres, have to be strengthened in order for any disease control activities to produce any health impact on community. At the same time, regulatory and supervisory functions of the central organisations need to be strengthened so that the system performance of the entire health sector could be assured and sustainable.

## 4.5 Institutional Framework of the Health Sector

The reforms of the health care system in Zambia is comprised of several structural layers. There are currently plans to merge some of the activities of the CBoH with those of the MoH so as to prevent overlaps in responsibilities. Under the health reforms, the main focus was first referral facilities in order to reduce congestion at the top referral hospitals.

It is in this line that the Zambian Government requested the Japanese Government to assist in implementing and financing the HIV/ TB project. It is considered that District Hospitals (First Referral Hospitals) and Health Centres with laboratory service will be the focal point in the implementation of the HIV/AIDS and TB control project activities.

## 5.0 The JICA UTH Cooperation

The JICA/ UTH cooperation ran for three phases. The phases are itemised below:

### 5.1 Infectious Disease Project – 1989 - 1995

The Infectious Disease Project (IDP), a technical cooperation between the Japanese and the Zambian governments, commenced in April 1989 and ended in March 1995. The project was implemented by the Japan International Cooperation Agency (JICA). Japanese experts were dispatched for the purpose of technological transfer in the field of clinical virology. A total of 22 Japanese (7 as long term and 15 as short-term experts) were dispatched for this project. These experts helped to lay the foundation for the various activities of the virology laboratory.

According to earlier evaluation mission reports, a total of 19 Zambians were sent to Japan for training in various fields including virology, and medical equipment maintenance at the virus research centre, Sendai National Hospital, Japan.

The main objectives of the IDP were:

To establish the laboratory diagnostic procedures for infectious diseases, particularly for viral infections at the University Teaching Hospital.

To analyse the aetiology among Zambian patients with infectious diseases by means of laboratory diagnosis.

To standardise the treatment measures for infectious diseases in Zambia by analysing the aetiology of the disease.

During the six years of the project a number of activities were done in the field of virology, paediatrics and medical equipment maintenance. The virology laboratory was opened in February 1992 as the first specialised laboratory for viral infections in Zambia. Projects in scientific research in clinical virology, public health in Zambia were commenced.

In September 1993, an evaluation team consisting of Japanese and Zambians evaluated the activities and achievements of the IDP and agreed that further collaboration between Zambian and Japanese Governments was necessary to achieve better control of infectious diseases in Zambia.

It was further decided that technical cooperation of IDP be extended to March 1995. During this one year follow up period, two Zambians were sent to the virus Research Centre at Sendai National Hospital, Japan for training.

## 5.2 Infectious Diseases Control Project – 1995 - 2000

The new project "Infectious Diseases Control Project (IDCP)' started after the final evaluation of the previous project under the agreement between the Zambian and Japanese Governments in April, 1995. The IDCP started in April 1995 and ended in March 2000.

Three Japanese experts were sent from Japan to work on the IDCP. The main purposes of IDCP are described as follows:-

1. To improve the quality of laboratory diagnosis of infectious diseases at UTH

2. To conduct etiological and epidemiological studies on infectious diseases for prevention and control at the hospitals and in the community.

3. To strengthen the diseases surveillance systems for infectious diseases, in particular, poliomyelitis, measles, acute respiratory infection (ARI) and HIV

4. To transfer essential laboratory techniques on infectious diseases to district hospital staff

5. The transfer laboratory techniques in immunology was to be an important function of the IDCP

## 5.3 The HIV/ TB Project – 2001 - 2006

The third and currently running phase of the JICA/ UTH cooperation is the HIV/ TB project. The Zambian Government requested this project after noticing that HIV/ AIDS and TB are very serious diseases in Zambia that needed immediate attention. It has the following expected outputs:

(1) Performance of laboratory techniques, data management and overall laboratory management are improved.
(2) Performance and quality of peripheral labs for HIV/AIDS and TB testing and surveillance are improved.
(3) Utilization of laboratory services by health workers (private, public and NGOs) is improved
(4) Information on HV/AIDS and TB generated by the project is utilized widely by majority of stakeholders in planning and implementing programmes (i.e. GRZ, other donors, health workers, NGOs, schools, youth and communities).
(5) Collaboration with HIV/AIDS and TB Working Groups is institutionalised.

## 6.0 National Medical Laboratory Policy

The Japanese funded project, being a laboratory-based intervention, operates within the framework of the national laboratory policy. This policy, according to Muyakwa who carried out an assessment of health policies in 2001, deals with all medical and

laboratory issues in the country including capacity building, standardisation of procedures and equipment, legal issues and organisational structures needed to implement the policy.

The vision of the policy is to provide Zambians with quality, cost-effective, appropriate laboratory services as close to the family as possible.

The policy goals are:

- To improve and maintain laboratory services at an optimum standard
- To provide national technical guidelines for the improvement and provision of laboratory services at each level of health care delivery
- To fully integrate laboratory standards and systems in the various components of health sector reforms

The implementation Strategy is:

- Full and active participation of all stakeholders
- Significant infusion of resources to raise standards to a basic minimum acceptable level and therefore the need for a co-ordinated response from government and co-operating partners to achieve the set goals
- Short-term priorities to focus on the improvement in basic inputs (equipment, supplies, human resources, infrastructure and utilities) and the full integration of the sector in improvements to delivery quality care in the health reforms process
- In the long term, quality to be achieved through the development of a sustainable system to support the laboratory services at all levels.
- The implementation is guided by a five-year implementation plan. Monitor various stages of the implementation process
- The situation analysis provides baseline indicators against which the progress can be measured.

## 7.0 UTH Mission

The JICA/ UTH cooperation is under the overall management of the UTH. In an interview during the course of this thematic evaluation, the UTH Executive Director Dr. T. Lambart stated that the UTH Mission Statement is:

> *"To provide affordable quality health care, function as a referral centre, train health providers, conduct research to find solutions to existing health problems and for the development of science."*

## 8.0 Findings

### 8.1 Relationship between the Japanese and Zambian Government

The study revealed that the relationship between the Japanese and Zambian Governments and people is very cordial. The support and cooperation efforts by the Japanese government are very highly regarded in Zambia. In one report evaluating the relationship between the European Union and the Zambian Government under the

ACP-EU Cotonou Agreement, the Private Sector in Zambia urged the EU to emulate the Japanese in terms of effective project implementation. The Japanese Infections Diseases Project (IDP) is one of those projects the Zambians treat as being highly successful and beneficial to the country.

## 8.2 Factors that contributed to success of JICA/ UTH Cooperation

A number of factors can be isolated to determining the high rating that the JICA/ UTH cooperation is receiving. These can be summarised as follows:

- High political commitment by both the Japanese and Zambian Governments.
- Clear, achievable and measurable objectives and indicators in the project document.
- High motivation by both Zambian and Japanese staff associated with the JICA/ UTH project
- Skilled and trained manpower on both the Zambian and Japanese sides of the laboratory staff
- Integration of the laboratory into the regular work of both the UTH and the UNZA School of medicine.
- Regular monitoring and evaluation by joint teams of Zambian and Japanese experts
- The training of Zambian staff in Japan has helped to introduce the staff to Japanese culture, which has made it easy for both Zambian and Japanese staff to work together.

## 8.3 Challenge Facing the JICA/ UTH Cooperation

The JICA/ UTH cooperation faced and continues to face some challenges. These can be summarised as follows:

1. The virology laboratory is the only one of its type in Zambia and in neighbouring countries. This has meant that it has a lot of work. The staff is, however, limited.
2. UTH has been suffering from an image problem in the eyes of the public and the media for a long time. The perception in the general public, which may be different from the reality, is that UTH is inefficient, poorly equipped with technical staff and equipment. This has meant that the virology laboratory, which is part of UTH, has not been able to escape this negative image despite its excellent work and outputs.
3. The ART has been introduced in Zambia without an all-encompassing policy framework. Private and Government health providers have been distributing ARV drugs without proper supervision. This has resulted in many types of drugs reaching the patients/ consumers. It is reported that some drugs do run out thus forcing patients/ consumers to use different drugs at short notice. This is likely to cause serious HIV resistance problems in the near future. The virology laboratory will be flooded with requests to deal with the HIV drug resistance problem.

## 8.4 Impact of the JICA/ UTH Cooperation

The impacts of the JICA/ UTH cooperation can be summarised as follows:

1. The JICA/ UTH cooperation has resulted in the construction of the virology laboratory and the supply of laboratory equipment. The cooperation, being part of UTH, has continued rendering laboratory services to the patients in the hospital and for training purposes at the UNZA School of Medicine. This has saved lives of patients and the trained human resources will contribute to infectious diseases control in Zambia.

2. The Zambian Staff at the JICA/ UTH cooperation has been exposed to a lot of intensive training both locally and in Japan in various medical fields such as tissue culture, serology/ immunology, electron microscopy, molecular virology and the repair and maintenance of medical equipment. These trained professionals sit on various working groups both within UTH and at the NAC, CBoH and MoH providing much needed expertise to the working groups.

3. The WHO has designated the virology laboratory to an inter country reference laboratory. Thus the virology laboratory has possibilities to offer its services to the surrounding countries. This development can act as a catalyst for other cooperating partners to work with UTH on the control of infectious diseases in the country.

4. The JICA/ UTH cooperation is involved in various research projects in the fields of polio, measles, HIV and TB. These research projects have been disseminated to various relevant stakeholders and also published in important local and international medical journals. Some of the institutions found the research work very useful in their daily work.

5. The JICA/ UTH cooperation has continued to offer training to staff in various institutions such as ZIHP, district hospitals and provincial hospitals as well as the armed forces. This has greatly increased these institutions ability to carry out laboratory diagnosis of infectious diseases.

6. The JICA/ UTH cooperation has been testing medicines from traditional healers to assess the potency of these medicines. These medicines are forwarded to the JICA/ UTH project by the NAC. These tests, though negative so far, are helping in the search for a cure for HIV.

7. The JICA/ UTH cooperation has continued to serve the country by responding to emergency disease outbreaks. This service is critical to saving lives.

## 9.0 Recommendations

In view of the above findings, concrete and actionable recommendations are hereby made. These are as follows:

1. Infectious diseases, including HIV/AIDS, are still a serious public health problem in Zambia. JICA has demonstrated great capacity to assist in developing interventions to control these diseases. It is therefore

recommended that the JICA/ UTH cooperation should be continued and the Japanese government should support it.

2. The Zambian Governement has introduced ART in Zambia. There are plans to scale up the number of HIV patients with access to the ART. There is, therefore, need to focus more on the possibility of resistance of the HIV to ART drugs. The diagnostic services are crucial in this exercise. The Zambia Government should strive to increase funding to both UTH and the virology laboratory to cope with this task.

3. The current narrowing of the project to HIV/ TB has left other infectious diseases such as polio and measles without support. It is recommended that the project supports the entire virology laboratory activities and not be restricted to HIV and TB alone

4. The Japanese support to the JICA/ UTH cooperation has helped strengthen the manpower base at the UTH generally and the virology laboratory in particular. During interviews in the course of this thematic evaluation, the Zambian management team at the virology laboratory stated that they feel sufficiently empowered to run the laboratory without long-term Japanese experts. In view of this, it is recommended that the Japanese support be reduced to supply of laboratory equipment, research partnerships and short-term consultancies. The number of long-term experts should be gradually reduced.

**List of Acronyms**

| | |
|---|---|
| ACP | African Caribbean and Pacific |
| ANC | Antenatal Care |
| AZT | Azidothymidine/Zidovudine |
| BTS | Blood Transfusion Service |
| CboH | Central Board of Health |
| CDC | Centers for Disease Control and Prevention (United Stated) |
| CDL | Chest Disease Laboratory |
| DOTS | Directly Observed Treatment Short-course |
| EU | European Union |
| ELISA | Enzyme Linked Immunosobent Assay |
| DHS | Demographic and Health Survey |
| HAART | Highly Active Anti-retroviral Theraphy |
| LDHMB | Lusaka District Health Management Board |
| IMR | Infant Mortality Rate |
| MTCT | Mother to Child Transmission (of HIV) |
| NVP | Nevirapine |
| HIPC | Highly Indebted Poor Country |
| SOP | Standard Operating Procedures |
| STI | Sexual Transmitted Infection |
| TB | Tuberculosis |
| TDRC | Tropical Disease Research Centre |
| UNZA | University of Zambia |
| UTH | University Teaching Hospital |
| VCT | Voluntary Counselling and Testing |
| WHO | World Health Organisation |
| ZIHP | Zambia Integrated Health Project |

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**List of people interviewed**

| NAME | INSTITUTION |
|---|---|
| 1. Dr. T. Lambart | UTH |
| 2. Dr. B. Chirwa | CBoH |
| 3. Dr. M. Monze | UTH |
| 4. Dr. Handema | UTH |
| 5. Mrs. Mulundu | UTH |
| 6. Dr. M. Sinkala | LDHMB |
| 7. Prof. N. Luo | Private Consultant |
| 8. Dr. C. Musumali | ZIHP |
| 9. Dr. R. Kumwenda | UNDP |
| 10. Dr. M Maboshe | WHO |
| 11. Dr. Sinyinza | CBoH |
| 12. Dr. Kafwebulula | CBoH |

# Appendices

1. Evaluation Grid
    1.1 NMIMR (Ghana)
    1.2 KEMRI (Kenya)
    1.3 UTH (Zambia)
2. Schedule of the Field Surveys
3. List of Interviewees in the Field Surveys
4. Bibliography

## Noguchi Memorial Institute of Medical Research

| Evaluation Questions | Survey Items | Information / Indicators | Data Sources | Survey Methods |
|---|---|---|---|---|
| 1. Program components and effects of the program | How was the infectious disease control in Ghana improved by the activities of NMIMR? | | | |
| 1.1 Impact on research activities | How were the outputs of research activities reflected on administrative services? | | | |
| | 1) How many technical articles does NMIMR contribute to internal/ external journal? | No. of contribution and publishing | NMIMR | Document review |
| | 2) Are there any researches of which results were utilized for or were reflected on the actual infectious disease control activities? | | NMIMR<br>MOH | Document review<br>interview |
| | VPD<br>1) Did the MOH introduce the quality control technology for measles, polio and yellow fever vaccines which was developed by the "Noguchi Memorial Institute Project Phase II (1991-1996)"? | | NMIMR<br>MOH | Interview |
| | 2) Did MOH introduce AIK-C vaccine for measles at 6 months in Ghanaian children? | | MOH | |
| | TB<br>1) Please explain the role of NMIMR and PHRL as the reference laboratory of TB respectively. | | NMIMR<br>MOH | |
| | Diarrhoeal Diseases<br>1) How was the cereal-based ORS developed by the "Noguchi Memorial Institute Project Phase II" contributed to infectious disease control? | | NMIMR<br>MOH | |
| | Parasites<br>1) How was the urine-based dipstick assay for Schistosomiasis diagnosis developed by the Noguchi Memorial Institute Project Phase II contributed to the Ghana medical sector? | | NMIMR<br>MOH | |
| 1.2 Impacts on administrative services | How was the administrative service for infectious disease control improved? | | | |
| | 1) How did the middle-level manpower training improve level of medical service? | | MOH | |
| | 2) How does NMIMR have communication with MOH for infectious disease control? | Existence of council/ committee and their activities | MOH/ GHS/ NMIMR | Document review/ Interview |

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| | 3) Does NMIMR set the priority research according to the national programme? | Annual action plan, mandate/ aim of the institute | NMIMR | Document review/ Interview |
| 1.3 Impacts on human resources development | How does NMIMR contribute to improve human resources development in infectious disease control? | | | |
| | 1) Did NMIMR conduct middle-level manpower training in STD after termination of the Infections Disease Project? | Annual report/ Record of training course | NMIMR | Interview |
| | 2) Did NMIMR conduct additional middle-level manpower training in Parasite and TB after termination of the Infections Disease Project? | Annual report/ Record of training course | NMIMR | Interview |
| | 3) Did the NMIMR hold any training courses in cooperation with MOH and/or NTP after termination of the Infections Disease Project? | Annual report/ Record of training course | NMIMR<br>MOH | Interview |
| | 4) How did the training courses contribute to improve the infectious disease control in Ghana? | | MOH<br>Related organizations | Interview |
| | 5) How does NMIMR train researcher/ technical staff? | Resume/ career of staff | NMIMR | Document review |
| | 6) Does NMIMR keep the technical skill level for experiment/ routine work? If yes, how does it prove as status 'good practice laboratory/ bio-safety/ guideline'? | Method of Quality control | MOH/ NMIMR/ WHO | Document review/ Interview |
| | 7) Does NMIMR have constant cooperation with external research organization? | No. of programmes and joint research | NMIMR/ donors (USAID, CIDA,DANIDA,WB, etc.) | Document review/ Interview |
| | 8) Does MOH/ MOE stipulate the status and the salary for human resources in NMIMR? | Grading of publish researcher on MOH/ MOE | MOH/ MOE | Document review/ Interview |
| 1.4 Impacts on information services | What kinds of information does NMIMR send to? And how was it utilised? | | | |
| | 1) Have you received any information (results of research activities) from the NMIMR?<br>If yes, how do you utilize that information? | Report system to MOH | MOH/GHS | |
| | 2) Does NMIMR have a channel for free access to epidemiologic information? | Report system to MOH<br>Free access to epidemiologic information system in | MOH/ GHS | Document review |

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| | | NMIMR | | |
| | 3) Does NMIMR have a survey network and skill? | Structure of HMIS and the research method | MOH/ HMIS | Interview |
| 1.5 Impacts on nations | How did NMIMR contribute to improve the health condition of nations? | | | |
| | 1) A series of pilot project aimed to improve PHC at 4 villages, namely Gomoa Fetteh, Gomoa Onyadze/Otsew, Jukwa, Mprumen in Central Region until 1997.<br>Did the NMIMR have any activities at these villages after termination of the JICA Project? | Report of the activities | NMIMR | Document review/ Interview |
| | 2) Does NMIMR have any activities target on communities or rural population? | Annual report | NMIMR | Document review/ Interview |
| | 3) Did the 4 villages establish sustainable PHC system in the villages? | Operation condition of Health station at Onyadze village.<br>Health condition of village people. | Village people | Interview |
| | 4) Did people in Mwachinga and Mtsangatamu have any kinds of positive / negative impacts from the project activities? | | Village people | Interview |
| 1.6 Historical changes of program approach and its adequacy. | 1) Were there any incidents in Ghana health sector that affected JICA Projects and/or NMIMR's activities?<br>If yes, what were those incidents? And what kind of actions you take for counter measures? | | NMIMR | Interview |
| 2. Roles of research organization in infectious disease control | What kinds of roles does NMIMR have as a research institute for infectious disease control in Ghana and/or Africa region? | | | |
| 2.1 Confirmation of the infectious diseases control in the health policy | How does the Government of Ghana tackle on the infectious diseases control? | | | |
| | 1) Is the infectious diseases control prioritized in the National Health Plan and programmes in the health sector? | National health plan, sector programme | MOH/ GHS | Document review/ Interview |
| | 2) How much budget is allocated for infectious diseases control in the health budget? | Health budget of MOH | MOH | Document review/ Interview |
| | 3) Is the infectious diseases control prioritized technical assistance of each donor's policy? | Donor report | NMIMR/ donors (USAID, CIDA,DANIDA,WB, etc.) | Document review/ Interview |

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| | 4) Who participates and what are the priority subjects in SWAp of health sector? | SWAp concept paper | SWAp participants (WB) | Document review/ Interview |
| | 5) How many infectious diseases control programme is in SWAp? | SWAp concept paper | SWAp participants (WB) | Document review/ Interview |
| | 6) How many programmes in SWAp for supporting NMIMR itself or using the NMIMR's function? | SWAp concept paper | SWAp participants (WB) | Document review/ Interview |
| 2.2 Position of NMIMR on the infectious diseases control | What is the role of NMIMR on the infectious diseases control system? | | | |
| | 1) Please explain the infectious disease control system in Ghana, that is to say key players (organizations) and their roles/functions. | | MOH | Document review/ Interview |
| | 2) Who is the responsible research organization for infectious disease prevention / control? | | MOH | |
| | 3) What is the role of NMIMR on the infectious diseases control system? | | NMIMR/ MOH (NACP, NTBP/NTP, etc.) | Interview |
| | 4) What is the position of NMIMR among other institutes? (What is the difference between NMIMR and other institute/ research center?) | | MOH/ MOE/ NMIMR | Interview |
| | 5) Does NMIMR execute its expected role completely? | | MOH/ MOE/ NMIMR | Document review/ Interview |
| | 6) Is there a resemblance technical assistance by other donor agency? | Donor TA programme | NMIMR/ donors (USAID, CIDA,DANIDA,WB, etc.) | Document review/ Interview |
| | 7) Is there a duplication of role with resemblance institutes in MOH | Structure and flow of HIMS | MOH/ NPHLS, Univ. Ghana etc. | Document review/ Interview |
| 2.3 Function of NMIMR | What kinds of functions does KEMRI have? | | | |
| | 1) What is the mandate and aim of NMIMR? | Brochure, publishing document | NMIMR | Document review/ Interview |
| | 2) What is the activity of NMIMR? | Annual Plan/ Report | NMIMR | Document review/ Interview |
| | 3) How is the structure of NMIMR and how many staff? | Brochure, publishing document | NMIMR | Document review/ Interview |
| | 4) How much is the budget and how does NMIMR provide budget? | Budget sheet | NMIMR | Document review/ Interview |
| | 5) What kind and how many experimental equipment for research NMIMR has? | Equipment list | NMIMR | Document review/ Interview |
| | 6) Are there any malfunctioned equipment? | Maintenance record | NMIMR | Document review/ Interview |
| | 7) What is the out put of NMIMR and how does NMIMR / MOH/ MOE evaluate it? | | MOH/ MOE/ NMIMR | Document review/ Interview |

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| | 8) What is the role of NMIMR in MOH/ MOE? | | MOH/ MOE/ NMIMR | Interview |
| | 9) How important infectious diseases researches are for NMIMR? | | MOH/ MOE/ NMIMR | Interview |
| | 10) What kinds of researches are studied in NMIMR? | | NMIMR | Document review/ Interview |
| | 11) NMIMR is appointed as WHO Reference Laboratory/ National Reference Laboratory. How this status helps/burden with activity of NMIMR? (ex: raising up the whole status of NMIMR, reputation, budget provision, quality of staff, burden of hard research requirement, etc.) | WHO report | MOH/ NMIMR/ WHO | Document review/ Interview |
| 3. Necessary condition for playing expected roles | What is the expected role of NMIMR as a research institute for infectious disease control in the future? | | | |
| | 1) Do you have any plan to expand NMIMR's roles/functions in the infectious disease control system? If yes, please explain your plan. | MOH/ MOE report | MOH/ MOE/ NMIMR | Document review/ Interview |
| | 2) Besides research activities, what kind of development does NMIMR want in the field of empowerment of human resources and/ or announcement of epidemiologic information? | MOH/ MOE report | MOH/ MOE/ NMIMR | Document review/ Interview |
| | 3) What is necessary implementation to satisfy above mentioned development plan? | MOH/ MOE report | NMIMR | Document review/ Interview |

**KEMRI**

| Evaluation Questions | Survey Items | Information / Indicators | Data Sources | Survey Methods |
|---|---|---|---|---|
| 1. Program components and effects of the program | How was the infectious disease control in Kenya improved by the activities of KEMRI? | | | |
| 1.1 Impact on research activities | How were the outputs of research activities reflected on administrative services? | | | |
| | 1) How many technical articles does KEMRI contribute to internal/ external journal? | No. of contribution and publishing | KEMRI<br>JICA Expert | Document review |
| | 2) Are there any researches of which results were utilized for or were reflected on the actual infectious disease control activities? | | KEMRI<br>MOH | Document review<br>interview |
| | Diarrhoeal Diseases<br>1) Does the vaccine for Rota virus vaccinated at 6 months in Kenyan children? | | MOH<br>KEMRI | Document review<br>interview |
| | Hepatitis<br>1) Please explain the future plan for producing and disseminating HEPCELL II. | | KEMRI<br>JICA Expert | Document review<br>interview |
| | 2) How did the HEPCELL II contribute to the infectious disease control in Kenya? | | MOH<br>KEMRI | Interview |
| | 3) How many kits of HEPCELL II does the MOH purchase annually? | Sales record | KEMRI<br>MOH | Document review<br>interview |
| | 4) Are there any competitive diagnostic kits for Hepatitis B? If yes, what is the share of HEPCELL II and others? | | KEMRI<br>MOH<br>Hospital | Document review<br>interview |
| | 5) How do you estimate the marketability of HEPCELL II? | | MOH<br>KEMRI<br>JICA Expert | |
| | 6) Does KEMRI have any plan to export HEPCELL II to neighboring countries? | | KEMRI | |
| | 7) What is the role of the Liver Disease Diagnostic Center? And what kinds of activities does it have? | | KEMRI<br>JICA Expert | Document review<br>interview |
| | ARI<br>1) According to the evaluation report, KEMRI recommended to change the standard curative drugs based on the result of drug sensitivity test of | | KEMRI<br>JICA Expert | Document review<br>interview |

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| | major bacterial and fungal ARI。<br>Was this recommendation realized? | | | |
| | 2) Does the KEMRI continuously conduct community based health education in Kibera, Nairobi after termination of the Project on research and control of infectious diseases Phase II (1996-2001)? | | KEMRI<br>JICA Expert | Document review<br>interview |
| | 3) How does KEMRI contribute to improve the ARI control? | | MOH<br>KEMRI | Interview |
| | HIV/AIDS<br>1) Please explain the current situation of PA and developing plan of HIV diagnostic kit. | | KEMRI<br>JICA Expert | Document review<br>interview |
| | 2) It was reported that 10 extracts with reverse transcriptase inhibitory activity and 8with HSV inhibitory activity was identified as the result of antiviral plant screening during the project on research and control of infectious diseases Phase II.<br>Does KEMRI continuously conduct additional study about theses extracts? | | KEMRI<br>JICA Expert | Document review<br>interview |
| | 3) KEMRI confirmed the efficacy of short-course AZT for the prevention of mother to child transmission of HIV during the project on research and control of infectious diseases Phase II.<br>Does KEMRI continuously conduct additional study about AZT? Or was this result utilized to improve the national intervention programs? | | KEMRI<br>JICA Expert | Document review<br>interview |
| | 4) How did KEMRI contribute to improve the HIV/AIDS control? | | MOH<br>KEMRI | Interview |
| 1.2 Impacts on administrative services | How was the administrative service for infectious disease control improved? | | | |
| | 1) How does the MOH plan to utilise the diagnosis kits developed by KEMRI? | | MOH | Document review<br>interview |
| | 2) How does KEMRI have communication with MOH for infectious disease control? | Existence of council/ committee and their activities | MOH/ KEMRI | Document review/<br>Interview |
| | 3) Does KEMRI set the priority research according to the national programme? | Annual action plan, mandate/ aim of the institute | KEMRI | Document review/<br>Interview |
| | 4) How was the result of Schistomiasis research reflected on the government program? | | MOH<br>KEMRI | Interview |
| | 5) How does KEMRI utilise the research facilities at Malindi and Kwale? | | KEMRI | Interview |
| 1.3 Impacts on | How does KEMRI contribute to improve human resources development in | | | |

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| human resource development | infectious disease control? | | | |
| | 1) Did KEMRI have continuously conducted seminars / workshops on hepatitis and liver disease after termination of the Project on research and control of infectious diseases (1990-1996)? | Records of seminar / workshop | KEMRI<br>JICA Expert | Document review<br>interview |
| | 2) How did the seminars / workshops contribute to improve the infectious disease control in Kenya? | | MOH/ KEMRI | Interview |
| | 3) Does KEMRI employ high qualified researcher/ technical staff? | Resume/ career of staff | KEMRI | Document review |
| | 4) Does KEMRI keep the technical skill level for experiment/ routine work? If yes, how does it prove as status 'good practice laboratory/ bio-safety/ guideline'? | Method of Quality control | MOH/ KEMRI/ WHO | Document review/<br>Interview |
| | 5) Does KEMRI have constant cooperation with external research organization? | No. of programmes and joint research | KEMRI/ donors (USAID, CIDA, EU, WB, AMREF etc.) | Document review/<br>Interview |
| | 6) Does MOH/ MOE stipulate the status and the salary for human resources in KEMRI? | grading of publish researcher on MOH/ MOE | MOH/ MOE | Document review/<br>Interview |
| 1.4 Impacts on information services | What kinds of information does KEMRI send to? And how was it utilised? | | | |
| | 1) Does KEMRI have a channel for free access to epidemiologic information? | Report system to MOH<br>Free access to epidemiologic information system in NMIMR | MOH | Document review |
| | 2) Does KEMRI have a survey network and skill? | Structure of HMIS and the research method | MOH/ HMIS | Interview |
| | 3) Have you received any information (results of research activities) from the KEMRI?<br>If yes, how do you utilize the information? | | MOH<br>WHO<br>Internal organizations | Interview |
| 1.5 Impacts on nations | How did KEMRI contribute to improve the health condition of nations? | | | |
| | 1) A series of research activities on Parasitology were conducted at Mwachinga and Mtsangatamu in Kwale district from 1979-1996. The Plan International (NGO) and the Institute of Tropical Medicine, Nagasaki University took over the project activities after termination of JICA project at the sites.<br>Were Schistosomiasis and Filariasis exterminated at the villages? | Research report | Plan International<br>KEMRI | Document review/<br>Interview |
| | 2) Did people in Mwachinga and Mtsangatamu have any kinds of positive | | Village people | Interview |

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| | / negative impacts from the project activities? | | | |
| | 3) Do people in Kibera improve their knowledge about ARI prevention through the health education program implemented by the Project on research and control of infectious diseases Phase II? | | Mothers in Kibera | Interview<br>Additional information;<br>A part of Kibera was demolished due to the Government decision on February 2004. Existing situation in Kebera is not clear. |
| 1.6 Historical changes of program approach and its adequacy. | 1) Were there any incidents in Kenya health sector that affected JICA Projects and/or KEMRI's activities?<br>If yes, what were those incidents? And what kind of actions you take for counter measures? | | KEMRI | Document review/ Interview |
| 2. Roles of research organization in infectious disease control | What kinds of roles does KEMRI have as a research institute for infectious disease control in Kenya and/or Africa region? | | | |
| 2.1 Confirmation of the infectious diseases control in the health policy | How does the Kenyan Government tackle on the infectious diseases control? | | | |
| | 1) Is the infectious diseases control prioritized in the National Health Plan and programmes in the health sector? | National health plan, sector programme | MOH | Document review/ Interview |
| | 2) How much budget is allocated for infectious diseases control in the health budget? | Health budget of MOH | MOH | Document review/ Interview |
| | 3) Is the infectious diseases control prioritized technical assistance of each donor's policy? | Donor report | KEMRI/ donors (USAID, CIDA, EU, WB, AMREF etc.) | Document review/ Interview |
| | 4) What is the priority subject in USAID-JAPAN Partnership of health sector? | USAID-JAPAN Partnership concept paper | USAID | Document review/ Interview |
| | 5) How many infectious diseases control programme is in USAID-JAPAN Partnership? | USAID-JAPAN Partnership concept paper | USAID | Document review/ Interview |

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| | 6) How many programmes in USAID-JAPAN Partnership for supporting KEMRI itself or using the institute function? | USAID-JAPAN Partnership concept paper | USAID | Document review/ Interview |
| 2.2 Position of the KEMRI in the infectious diseases control | What is the role of KEMRI on the infectious diseases control system? | | | |
| | 1) Please explain the infectious disease control system in Kenya, that is to say key players (organizations) and their roles/functions. | | MOH | Document review/ Interview |
| | 2) Who is the responsible research organization for infectious disease prevention / control? | | MOH | Document review/ Interview |
| | 3) What is the role of KEMRI on the infectious diseases control system? | | KEMRI/ MOH (NPHLS, IEPI, NASCOP, NMCP, NLTCP, etc.) | Interview |
| | 4) What is the position of KEMRI among other institutes? (What is the difference between the institute and other institute/ research center?) | | MOH/ MOE/ KEMRI | Interview |
| | 5) Does KEMRI execute its expected role completely? | | MOH/ MOE/ KEMRI | Document review/ Interview |
| | 6) Is there a resemblance technical assistance by other donor agency? | Donor TA programme | KEMRI/ donors (USAID, CIDA, EU, WB, AMREF etc.) | Document review/ Interview |
| | 7) Is there a duplication of role with resemblance institutes in MOH? | Structure and flow of HIMS | MOH/ Univ. Nairobi/ Univ. Moi etc. | Document review/ Interview |
| 2.3 Function of the KEMRI | What kinds of functions does KEMRI have? | | | |
| | 1) Is there a clear mandate and aim of KEMRI? | Brochure, publishing document | KEMRI | Document review/ Interview |
| | 2) What is the activity of KEMRI? | Annual Plan/ Report | KEMRI | Document review/ Interview |
| | 3) How is the structure of KEMRI and how many staff? | Brochure, publishing document | KEMRI | Document review/ Interview |
| | 4) How much is the budget and how does KEMRI provide budget? | Budget sheet | MOH/ MOE/ KEMRI | Document review/ Interview |
| | 5) What kind and how much experimental equipment for research KEMRI has? | Equipment list | KEMRI | Document review/ Interview |
| | 6) What is the out put of KEMRI and how does KEMRI/ MOH/ MOE evaluate it? | | MOH/ MOE/ KEMRI | Interview |
| | 7) What is the role of KEMRI in MOH/ MOE? | | MOH/ MOE/ KEMRI | Interview |
| | 8) How important infectious diseases researches are for KEMRI? | | MOH/ MOE/ KEMRI | Intervie |

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| | 9) What kinds of researches are studied in KEMRI? | | KEMRI | Document review/ Interview |
| | 10) KEMRI is appointed as WHO Reference Laboratory/ National Reference Laboratory. How this status helps/burden with activity of KEMRI? (ex: raising up the whole status of KEMRI, reputation, budget provision, quality of staff, burden of hard research requirement, etc.) | WHO report | MOH/ KEMRI/ WHO | Document review/ Interview |
| 3. Necessary condition for playing expected roles | What is the expected role of KEMRI as a research institute for infectious disease control in the future? | | | |
| | 1) Do you have any plan to expand KEMRI's roles/functions in the infectious disease control system? If yes, please explain your plan. | MOH/ MOE report | MOH/ MOE/ KEMRI | Document review/ Interview |
| | 2) Besides research activities, what kind of development does KEMRI want in the field of empowerment of human resources and/ or announcement of epidemiologic information? | | KEMRI | Document review/ Interview |
| | 3) What is necessary implementation to satisfy above mentioned development plan? | | KEMRI | Interview |

**UTH**

| Evaluation Questions | Survey Items | Information / Indicators | Data Sources | Survey Methods |
|---|---|---|---|---|
| 1. Program components and effects of the program | How was the infectious disease control in Zambia improved by the activities of UTH? | | | |
| 1.1 Impact on research activities | How were the outputs of research activities reflected on administrative services? | | | |
| | 1) How many technical articles does UTH contribute to internal/ external journal? | No. of contribution and publishing | UTH | Document review |
| | 2) Are there any researches of which results were utilized for or were reflected on the actual infectious disease control activities? | | MOH/<br>CBoH<br>UTH<br>JICA Expert | Document review<br>interview |
| | Polio<br>1) Does UTH continuously conduct vaccine potency testing program for poliovirus vaccine?<br>And how is the result of test utilized? | | National EPI manager<br>UTH | Document review<br>interview |
| | HIV/AIDS<br>1) How are new technologies introduced by UTH such as CD4/CD8count utilized? | | MOH/<br>CBoH<br>UTH<br>JICA Expert | |
| 1.2 Impacts on administrative services | How was the administrative service for infectious disease control improved? | | | |
| | 1) How are the following manuals and guidelines prepared by UHT utilized?<br>a. National Guidelines for Infectious Diseases<br>b. Laboratory Manual for Technicians in Zambia<br>c. Surveillance guidelines and laboratory testing guidelines for notifiable viral diseases | | MOH/<br>CBoH<br>UTH<br>JICA Expert | Document review<br>interview |
| | 2) How does UTH contribute to national EPI programme? | | MOH/<br>CBoH<br>UTH<br>JICA Expert | Document review<br>interview |
| | 3) How the UTH support surveillance for ARI, influenza, measles virus | | MOH/ | Document review |

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| | and polioimyelitis? | | CBoH<br>UTH | interview |
| | 4) How does UTH have communication with MOH for infectious disease control? | Existence of council/ committee and their activities | MOH/ CBoH/ UTH | Document review/ Interview |
| | 5) Does UTH set the priority research according to the national programme? | Annual action plan, mandate/ aim of the institute | MOH/<br>CBoH<br>UTH | Document review/ Interview |
| 1.3 Impacts on human resource development | How does UTH contribute to improve human resources development in infectious disease control? | | | |
| | 1) Does the UTH have any training programmes for staff members of hospitals in rural areas except the training programmes under JICA projects? | Annual report | UTH | Document review/ Interview |
| | 2) How the training programmes held by JICA projects contribute to infectious disease control in Zambia? | | MOH/ CBoH/ UTH<br>JICA Expert | Interview |
| | 3) Does UTH employ high qualified researcher/ technical staff? | Resume/ career of staff | UTH | Document review |
| | 4) Does UTH contribute technical articles to internal/ external journal? | No. of contribution and publishing | UTH | Document review |
| | 5) Does UTH keep the technical skill level for experiment/ routine work? If yes, how does it prove as status 'good practice laboratory/ bio-safety/ guideline'? | Method of Quality control | MOH/ UTH/ WHO | Document review/ Interview |
| | 6) Does UTH have constant cooperation with external research organization? | No. of programmes and joint research | UTH/ donors (USAID, CIDA, DANIDA, WB, etc.) | Document review/ Interview |
| | 7) Does MOH/ MOE stipulate the status and the salary for human resources in UTH? | grading of publish researcher on MOH/ MOE | MOH/ MOE | Document review/ Interview |
| 1.4 Impacts on information services | What kinds of information does UHT send to? And how was it utilised? | | | |
| | 1) Have you received any information (results of research activities) from the UTH?<br>If yes, how do you utilize that information? | | WHO, UNICEF, UNAIDS | Interview |
| | 2) Does UTH have a channel for free access to epidemiologic information? | Report system to MOH<br>Free access to epidemiologic information system in UTH | MOH/ CBoH | Document review |

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| | 3) Does UTH have a survey network and skill? | Structure of HMIS and the research method | MOH/ HMIS | Interview |
| 1.5 Impacts on nations. | How did UTH contribute to improve the health condition of nations? | | | |
| | 1) Was the disposable type syringe introduced for avoiding hospital-acquired infection into the hospital? | | Hospital/ MOH/ CBoH | |
| | 2) Was the recommendation about the advancing vaccination for measles and polio realized? | | MOH/ CBoH | |
| 1.6 Historical changes of program approach and its adequacy. | 1) Were there any incidents in Zambia health sector that affected JICA Projects and/or UTH's activities? If yes, what were those incidents? And what kind of actions you take for counter measures? | | UTH JICA Expert | Interview |
| 2. Roles of research organization in infectious disease control | What kinds of roles does UTH have as a research institute for infectious disease control in Zambia and/or Africa region? | | | |
| 2.1 Confirmation of the infectious diseases control in the health policy | How does the Zambia Government tackle on the infectious diseases control? | | | |
| | 1) Is the infectious diseases control prioritized in the National Health Plan and programmes in the health sector? | National health plan, sector programme | MOH/ CBoH | Document review/ Interview |
| | 2) How much budget is allocated for infectious diseases control in the health budget? | Health budget of MOH | MOH | Document review/ Interview |
| | 3) Is the infectious diseases control prioritized technical assistance of each donor's policy? | Donor report | UTH/ donors (USAID, CIDA, DFID, WB, etc.) | Document review/ Interview |
| | 4) Who participates and what are the priority subjects in SWAp of health sector and USAID-JAPAN Partnership? | SWAp/ USAID-JAPAN Partnership concept paper | SWAp participants (WB), USAID | Document review/ Interview |
| | 5) How many infectious diseases control programme is in SWAp and USAID-JAPAN Partnership? | SWAp/ USAID-JAPAN Partnership concept paper | SWAp participants (WB), USAID | Document review/ Interview |
| | 6) How many programmes in SWAp and USAID-JAPAN Partnership for supporting UTH itself or using the institute function? | SWAp/ USAID-JAPAN Partnership concept paper | SWAp participants (WB), USAID | Document review/ Interview |
| | 7) Is there a resemblance technical assistance by other donor agency? | Donor TA programme | UTH/ donors (USAID, | Document review/ |

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| | | | CIDA, DFID, WB, etc.) | Interview |
| | 8) Is there a duplication of role with resemblance institutes in MOH? | Structure and flow of HIMS | MOH/ CBoH laboratory/ ASTL/ Chest Diseases Laboratory/ NASTLP/ NTLP/ NTP | Document review/ Interview |
| 2.2 Position of UTH on the infectious diseases control | What is the role of UTH on the infectious diseases control system? | | | |
| | 1) Please explain the infectious disease control system in Zambia, that is to say key players (organizations) and their roles/functions. | | MOH/ CBoH | Document review/ Interview |
| | 2) Who is the responsible research organization for infectious disease prevention / control? | | MOH/ CBoH | |
| | 3) What is the role of UTH on the infectious diseases control system? | | UTH/ MOH | Interview |
| | 4) What is the role of UTH in MOH/ MOE? | | MOH/ MOE/ UTH | Interview |
| | 5) What is the position of UTH among other institutes? (What is the difference between UTH and other institute/ research center?) | | MOH/ MOE/ UTH | Interview |
| | 6) How important infectious diseases researches are for UTH? | | MOH/ MOE/ UTH | Interview |
| | 7) What kinds of researches are studied in UTH? | | UTH | Document review/ Interview |
| | 8) Does UTH execute its expected role completely? | | MOH/ MOE/ UTH | Document review/ Interview |
| 2.3 Function of UTH | What kinds of functions does UTH have? | | | |
| | 1) Is there a clear mandate and aim of UTH? | Brochure, publishing document | UTH | Document review/ Interview |
| | 2) What is the activity of UTH? | Annual Plan/ Report | UTH | Document review/ Interview |
| | 3) How is the structure of UTH and how many staff? | Brochure, publishing document | UTH | Document review/ Interview |
| | 4) How much is the budget and how does UTH provide budget? | Budget sheet | MOH/ MOE/ UTH | Document review/ Interview |
| | 5) What kind and how much experimental equipment for research UTH has? | Equipment list | UTH | Document review/ Interview |
| | 6) What is the out put of UTH and how do UTH / MOH/ MOE evaluate it? | | MOH/ MOE/ UTH | Interview |
| | 7) UTH is appointed as WHO Reference Laboratory/ National Reference Laboratory. How this status helps/burden with activity of UTH? (ex: raising up the whole status of UTH, reputation, budget provision, quality of staff, burden of hard research requirement, etc.) | WHO report | MOH/ UTH/ WHO | Document review/ Interview |
| 3. Necessary | What is the expected role of UTH as a research institute for infectious | | | |

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| condition for playing expected roles | disease control in the future? | | | |
| | 1) Do you have any plan to expand UTH's roles/functions in the infectious disease control system? If yes, please explain your plan. | MOH/ MOE report | MOH/ MOE/ UTH | Document review/ Interview |
| | 2) Besides research activities, what kind of development does UTH want in the field of empowerment of human resources and/ or announcement of epidemiologic information? | | UTH | Document review/ Interview |
| | 3) What is necessary implementation to satisfy above mentioned development plan? | | UTH | Interview |

## Schedule of the First Field Survey (Kenya, Zambia)

| Days | Date | Schedule |
|---|---|---|
| 1 | 7/17 Sat | Leaving Japan (Evaluation Analysis, Analysis of Research Institutes, Evaluation Planning)<br>Via London |
| 2 | 18 Sun | Arriving Nairobi/Internal Meeting. |
| 3 | 19 Mon | Courtesy call and interview with the KEMRI.<br>Courtesy call on the MOH. |
| 4 | 20 Tue | Courtesy call on the Embassy of Japan, Interview with the JICA Kenya Office,<br>Discussions with the KEMRI. |
| 5 | 21 Wed | Interview with CMR, CRDR, PHR of the KEMRI and the Research and Control of Infectious Disease Project. |
| 6 | 22 Thu | Interview with CDRD of the KEMRI and the Research and Control of Infectious Disease Project. |
| 7 | 23 Fri | Interview with DCDC, MOH<br>Interview with CVR of the KEMRI and related personnel of JICA projects |
| 8 | 24 Sat | Internal Meeting |
| 9 | 25 San | Data Analysis |
| 10 | 26 Mon | Interview with the KEMRI HQ, CMR and ESACIPAC<br>Interview with NMCP |
| 11 | 27 Tue | Interview with the MOH<br>Interview with ESACIPAC |
| 12 | 28 Wed | Interview with NPHLS and National Blood Transfusion Center<br>Interview with CCR of KEMRI |
| 13 | 29 Thu | Interview with USAID, CDC, Walter Reed, AMREF, Walter Reed (U.S. Army Medical Research Unit) |
| 14 | 30 Fri | Field survey in West Kenya (Evaluation Analysis and Evaluation Planning)<br>Interview with WHO and UNICEF (Analysis of Research Institutes) |
| 15 | 31 Sat | Field survey in West Kenya (Evaluation Analysis and Evaluation Planning)<br>Internal Meeting |
| 16 | 8/1 San | Leaving Japan (Team Leader)<br>Data analysis (Evaluation Analysis, Analysis of Research Institutes, Evaluation Planning) |
| 17 | 8/2 Mon | Arriving Nairobi (Team Leader)<br>Interview with the JICA Kenya Office and the MOH (Evaluation Analysis, Analysis of Research Institutes, Evaluation Planning)<br>Internal Meeting |
| 18 | 8/3 Tue | Interview with the KEMRI, NASCP and MOH |
| 19 | 8/4 Wed | Courtesy call on the Director of the KEMRI |
| 20 | 8/5 Thu | Report to the KEMRI |
| 21 | 8/6 Fri | Report to the Embassy of Japan and JICA Kenya Office |
| 22 | 8/7 Sat | Leave Nairobi for Lusaka |
| 23 | 8 San | Internal Meeting |
| 24 | 9 Mon | Courtesy call on the UTH HQ, CBoH and Embassy of Japan, Interview with the JICA Zambia Office |
| 25 | 10 Tue | Interview with JICA experts and counterparts |
| 26 | 11 Wed | Courtesy call on the MOH<br>Interview with the Virology Lab. and TB Lab. |
| 27 | 12 Thu | Interview with NAC and the UTH |

| Days | Date | Schedule |
|---|---|---|
| 28 | 13 Fri | Interview with the Virology Lab, TB Lab, Lusaka District Chelstone Health Center<br>Leaving Zambia (Evaluation Planning) |
| 29 | 14 Sat | Interview with CBoH<br>Arriving Japan (Evaluation Planning) |
| 30 | 15 San | Leave Lusaka for Livingstone |
| 31 | 16 Mon | Visit to Livingstone Central Hospital<br>Leave Livingstone for Lusaka |
| 32 | 17 Tue | Interview with the Virology Lab, CBoH, UNDP and CDC<br>Leaving Zambia (Team Leader) |
| 33 | 18 Wed | Interview with WHO and WB<br>Arriving Japan (Team Leader) |
| 34 | 19 Thu | Data collection from the UTH and MOH<br>Interview with UNAIDS and UNICEF |
| 35 | 20 Fri | Data collection from the UTH and MOH<br>Interview with DFID |
| 36 | 21 Sat | Interview with JICA staff |
| 37 | 22 San | Data analysis |
| 38 | 23 Mon | Report to the UTH, Embassy of Japan and JICA Zambia Office |
| 39 | 24 Tue | Leaving Zambia |
| 40 | 25 Wed | Arriving Japan |

**Schedule of the Second Field Survey (Ghana)**

| Days | Date | Schedule |
|---|---|---|
| 0 | 9/10 Fri | Leaving Zambia (Communicable Disease Control)<br>(Communicable Disease Control joined from Zambia) |
| 1 | 11 Sat | Leaving Japan (Team Leader, Evaluation Analysis, Analysis of Research Institutes) |
| 2 | 12 Sun | Arriving Accra (Team Leader, Evaluation Analysis, Analysis of Research Institutes) |
| 3 | 13 Mon | Courtesy call on the MOH, Embassy of Japan, Interview with the JICA Ghana Office |
| 4 | 14 Tue | Courtesy call on the NMIMR, Interview with WACIPAC<br>Interview with GHS, MFEP and EU |
| 5 | 15 Wed | Interview with DFID and UNFPA |
| 6 | 16 Thu | Interview with UNICEF, WB and WHO<br>Interview with Counterparts in the NMIMR |
| 7 | 17 Fri | Interview with USAID, the Royal Netherlands Embassy and DANIDA<br>Courtesy call on the MOE<br>Leaving Accra (Team Leader) |
| 8 | 18 Sat | Internal Meeting |
| 9 | 19 Sun | Data Analysis<br>Arriving Japan (Team Leader)<br>Leaving Accra (Communicable Diseases Control) |
| 10 | 20 Mon | Arriving Japan (Communicable Diseases Control)<br>Interview with Counterparts in the NMIMR |
| 11 | 21 Tue | Interview with UNAIDS and NPHRL<br>Interview with Counterparts in the NMIMR |

| Days | Date | Schedule |
|---|---|---|
| 12 | 22 Wed | Interview with Counterparts in the NMIMR |
| 13 | 23 Thu | Additional data collection |
| 14 | 24 Fri | Additional data collection |
| 15 | 25 Sat | Internal Meeting |
| 16 | 26 Sun | Data Analysis |
| 17 | 27 Mon | Report to the NMIMR |
| 18 | 28 Tue | Report to the Embassy of Japan and JICA Ghana Office<br>Leaving Accra |
| 19 | 29 Wed | Via London |
| 20 | 30 Thu | Arriving Japan |

## List of Interviewees

### Interviewees in Kenya

| Name | Position |
|---|---|
| Ministry of Health | |
| Dr. A. O. Misore | Head, Dept. of Preventive and Promotive Health Services |
| Dr. S. Nzioka | Head of Communicable Diseases, Division of Communicable Diseases Control |
| Dr. Muhamed | Director of National AIDS and STDs Control Programme |
| Dr. Sam Ochola | Director of the National Malaria Control Programme |
| Mr. Kitenge | Chief of the laboratory, National Blood Transfusion Centre |
| KEMRI | |
| Dr. Davy K. Koech | KEMRI Director |
| Mr. Dunstan M. Ngumo | KEMRI Deputy Director |
| Dr. F. A. Okoth | CVR Director |
| Dr. P. M. Nyakundi | CCR Acting Director |
| Dr. Charles. S. Mwandawiro | ESACIPAC Director |
| Mr. G.A.O. Seko | Engineering Division |
| Dr. Phoebe Josiah | Collaboration and Partnership Division |
| Dr. Solomon S.R. Mpoke | CBRD, JICA Project Coordinator |
| Dr. Evans Amukoye | CRDR Director |
| Dr. Njeri Wamae | CMR Director |
| Dr. Willie Abela Githui | Principal Research Officer, CRDR / WHO recognized laboratory |
| Dr. Hellen Meme-Murerwa | Research Officer, CDRD / WHO recognized laboratory |
| Dr. Peter M. Tukei | Assistant Director/Laboratory Director of CDC/KEMRI Nairobi |
| Mr. Peter Kaiguri | Blood Safety Project |
| International Centre of Insect Physiology and Ecology (ICIPE) | |
| Dr. John I. Githure | Head, Human Health Division |
| USAID | |
| Dr. Bedan Gichanga | Programme officer |
| CDC | |
| Mr. Bill Galo | Deputy Director for Operations |
| Ms. Heather Burke | Deputy Director |
| African Medical Research Foundation | |
| Dr. Mette Kjaer | Director |
| Walter Reed (USA Medical Research Unit) | |
| Mr. Norman Peterson | Administrator |
| WHO Country Office | |
| Dr. Eliki | Country Representative |
| UNICEF | |
| Dr. Iyabode Olusanmi | Health programme officer |
| Embassy of Japan | |
| Masanori YUZAWA | First Secretary |
| Research and Control of Infectious Disease Project | |
| Isao OISHI | JICA Expert (Chief Advisor) |
| Tomoo UKON | JICA Expert (Opportunistic Infection) |
| Yoshito EIZURU | JICA Expert (Traditional Medicine) |
| Kozo ONO | JICA Project Coordinator |
| International Parasite Control Project | |
| Teruaki AMANO | JICA Expert (Chief Advisor) |
| Toshiki AWASAWA | JICA Expert (Parasite Control) |
| Yoshinori MITSUI | JICA Expert (Public Health) |

| Name | Position |
|---|---|
| Tsutomu KOBAYASHI | JICA Project Coordinator |
| JICA Kenya Office | |
| Yoshiaki KANO | Resident Representative |
| Tom NITTA | Deputy Resident Representative |
| Takayuki NAKAGAWA | Assistant Resident Representative (Regional Support Programme HIV/AIDS |
| Shinichi TAKENAKA | Project Formulation Advisor |
| Dr. Willie Nyambati | JICA Senior Programme officer |

## Interviewees in Zambia

| Name | Position |
|---|---|
| Ministry of Health | |
| Mr. Chimfwenbe | Director of Planning and Development |
| Mr. Alex Simwanza | Programme Director, National AIDS Committee |
| Central Board of Health | |
| Dr. Ben Chirwa | Director General |
| Dr. Kahenya | Laboratory Specialist |
| Dr. Syninza | Director, Department of Public Health and Research |
| University Teaching Hospital | |
| Dr. T. K. Lambart | Managing Director |
| Dr. Francis Kasolo | Head of the Virology Laboratory |
| Dr. Mwaka Monze | Deputy head of the Virology Laboratory, Virus culture and Outbreak Investigation Unit |
| Dr. Ray Handema | Molecular Biology Unit, Senior scientist, Virology Laboratory |
| Mr. David Lubasi | Biomedical scientist, TB Laboratory |
| Ms. Charity Habeenzu | Biomedical scientist, TB Laboratory |
| Ms. Mazyanga Liwewe | Laboratory scientist, acting head of the Virus Culture and Outbreak Investigation Unit, Virology Laboratory, |
| Dr. Zulu Wamemba | Medical officer, head of TB laboratory |
| Ms. Idah Mweene Ndumba | Biomedical scientist, Chief medical laboratory technologist, Chief of the Microbiology Laboratory |
| Ms. Gina Mulundu | Virology Laboratory, Lecturer of the School of Medicine, Univ. of Zambia (UNZA) |
| Lusaka District Health Management Board | |
| Dr. Moses Sinkala | Director of Health |
| Livingstone Central Hospital | |
| Dr. Makani | Director |
| Former Minister of Health | |
| Prof. N.Luo | |
| UNDP | |
| Dr. Rosemary Kumwenda | HIV/AIDS Advisor |
| CDC | |
| Dr. Marc Bulterys | Director |
| Dr. Lin Parsons | Public Health Consultant |
| Dr. Alwyn Mwinga | Medical Epidemiologist |
| Dr. Bereneice M. Madison | Health Scientist |
| WHO | |
| Dr. Maboshe | Country team adviser for TB |
| Dr. Sunkutu | Country team adviser for HIV/AIDS |
| World Bank | |
| Dr. Musonda Rosemary Sunkutu | Senior Health Specialist |

| Name | Position |
|---|---|
| UNAIDS | |
| Dr. Cathryn Sizi | Country Coordinator |
| UNICEF | |
| Dr. Birthe Locatelli-Rossi | Head of the Health Section |
| Dr. Flint Zulu | Assistant Project Officer for Child Health |
| DFID | |
| Mr. Anthony Daly | Adviser Health and HIV/AIDS |
| HIV/AIDS & Tuberculosis Control Project | |
| Tetsuo MIZUTANI | JICA Expert (Chief Advisor) |
| Toru KUBO | JICA Expert (HIV Virology and Immunology) |
| Tomoko KUDO | JICA Expert (Tuberculosis) |
| Mami Hirota Shields | JICA Expert (Public Health/Epidemiology) |
| Kuniko YOSHIDA | JICA Expert (ARV Treatment) |
| Yoshikazu SEKINO | JICA Project Coordinator |
| Embassy of Japan | |
| Ken-ichi YUMOTO | Second Secretary |
| JICA Zambia Office | |
| Eiji INUI | Resident Representative |
| Katsuichiro SAKAI | Deputy Resident Representative |
| Shiro KITAZAWA | Assistant Resident Representative |
| Tomoko ZAMA | HIV/AIDS and Tuberculosis Control Programme Coordinator |
| Festus Lubinga | Programme Officer |

## List of Interviewees in Ghana

| Name | Position |
|---|---|
| Ministry of Health | |
| Dr. Edward Addai | Head of Monitoring and Evaluation, Division of Policy, Planning, Monitoring and Evaluation |
| Dr. Robert Azumah | Deputy Director, Division of Traditional and Alternate Medicine |
| Mr. Jones Ofosu | Deputy Director, Division of Human Resources Management and Development |
| Ms. Salah Math | Deputy Director, Division of Administration |
| Ghana Health Service | |
| Dr. Sam Adjei | Deputy Director General |
| Dr. George Amofa | Director, Public Health Division |
| Mr. A. Manu Sarpong | Administrator, Public Health Division |
| Dr. Alex Asamoah Adu | Director, National Public Health Reference Laboratory |
| Dr. John Gyapong | Director, Health Research Unit |
| Miss Evelyn Quaye | Care & Support Coordinator, National AIDS/STI Control Programme |
| Dr. K. O. Antwi-Aqyei | Programme Manager, Expand Programme on Immunization |
| Dr. Frank Bonsu | Programme Manager, National TB Control Programme |
| Dr. L. Ahadzio | Head, Surveillance Unit |
| Ministry of Finance and Economic Planning | |
| Dr. Sam Archer | Head of Japan Desk |
| Mr. N. B. Bowah | Economic Officer, Budget Unit |
| Ms. Yvonne O. Quansah | Prime Economic Officer, Aid/Debt Management Unit |
| Ministry of Education | |
| Mr. Ato Essuman | Chief Director |
| Ms. Mary D. Ouaya | National Coordinator, GSE-SHEP |
| Ms. Tokuko Matsuda | JICA Expert |
| Noguchi Memorial Institute of Medical Research | |

| Name | Position |
|---|---|
| Prof. David Ofori-Adjei | Director General |
| Dr. Margaret Amar-Klemesu | Deputy Director |
| Mr. Okyere Boateng | Administrative Secretary |
| Mr. E.O. Lamptey | Head, Maintenance Unit |
| Prof. Michael D. Wilson | Head, Parasitology Unit/ WACIPAC |
| Dr. Daniel Boakye | Deputy Project Manager, Parasitology Unit/ WACIPAC |
| Dr. Nana K. Ayisi | Head, Virology Unit |
| Dr. William Ampofo | Research Fellow, Virology Unit |
| Mr. Jacob Arthur-Quarn | Deputy Head, Principle Technician, Virology Unit |
| Dr. Osei-Kwasi | Technical Adviser, Virology Unit |
| Dr. Kwasi Addo | Head, Bacteriology Unit |
| Dr. Kwadwo Koram | Head, Epidemiology Unit |
| Dr. Batholomew Akanmori | Head, Immunology Unit |
| Dr. E.E.K.Takyi | Head, Nutrition Unit |
| Prof. Alexander Nyarko | Head, Clinical Pathology Unit |
| Dr. Phyllis Addo | Head, Laboratory Animal Unit |
| Dr. Daniel Kojo Arhinful | Research Coordinator, IMMPACT Project |
| EU | |
| Ms. Janet Appiah | Programme Officer, Social Sector |
| DFID | |
| Mr. Will Gust | Programme Manager, Human Development |
| UNFPA | |
| Dr. Emmanuel Tofoatsi | National Programme Officer |
| Dr. Gilfy Addico | Officer, National Professional Project Personnel (NPPP) Reproductive Health |
| UNICEF | |
| Dr. Aliu Bello | Project Officer |
| World Bank | |
| Ms. Georgia Dawson Amoah | Project Officer |
| WHO Country Office | |
| Dr. Melvin George | Representative |
| Ms. Messeret Eshetu | Epidemiologist |
| Dr. Moricir Newman | Medical Programme Officer for HIV/AIDS/ STI |
| Dr. Fericia Ownsu-Amiwi | Medical Programme Officer for Malaria |
| USAID | |
| Ms. Ursula Nadolny | Chief, Health Population and Nutrition Office |
| Dr. Peter Wondergem | HIV/AIDS Adviser, Health Population and Nutrition Office |
| Dr. Goel K. Draqeed, | Child Health Adviser, Health Population and Nutrition Office |
| Royal Netherlands Embassy | |
| Dr. Janvan der Horst | Health and Gender Development Advisor, First Secretary |
| DANIDA | |
| Dr. Kobina | Health Officer, Health Sector Support Office |
| UNAIDS | |
| Dr. Warren Naamara | Country Coordinator |
| Embassy of Japan | |
| Ms. Kazuko ASAI | Ambassador of Japan |
| Mr. Takafumi NAKASE | Researcher at the Japanese Embassy to Ghana |
| WACIPAC | |
| Mr. Hisayoshi OGIWARA | JICA Expert (Chief Advisor) |
| Ms. Yukari KOGA | JICA Project Coordinator |
| Ghana JICA Office | |
| Mr. Kenichi SHISHIDO | Resident Representative |
| Mr. Shinji OBUCHI | Deputy Resident Representative |
| Ms. Megumi HIROSE | Assistant Resident Representative (Health) |
| Ms. Haruyo SHIMIZU | Project Formulation Advisor (Health Sector) |

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