

Ex-post Evaluation Study on  
The Infectious Disease Project at  
Noguchi Memorial Institute for Medical Research in Ghana

ガーナ共和国野口記念医学研究所感染症対策プロジェクト  
事後評価報告書

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Japan International Cooperation Agency

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MARIAN TADEFKA-KUBABOM



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## **REVIEW REPORT**

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## ABBREVIATIONS

|         |  |
|---------|--|
| AIDS    | Acquired Immunodeficiency Syndrome                     |
| AMANET  | African Malaria Network                                |
| ARM     | Annual Research Meeting                                |
| ARSN    | African Rotavirus Surveillance Network                 |
| CDC     | Centers for Disease Control and Prevention             |
| CHS     | College of Health Science                              |
| DANIDA  | Danish Development Agency                              |
| DFID    | Department for International Development               |
| DHRC    | Dodowa Health Research Centre                          |
| EEC     | European Economic Commission                           |
| EPI     | Expanded Programme for Immunization                    |
| EPP     | Estimation and Projection Package                      |
| EU      | European Union   |
| FHI     | Family Health International                            |
| GAC     | Ghana AIDS Commission                                  |
| GDCP    | Ghana-Dutch Research Collaboration Project             |
| GDHS    | Ghana Demographic and Health Survey                    |
| GETFUND | Ghana Education Trust Fund                             |
| GHS     | Ghana Health Service                                   |
| GIS     | Geographic Information System                          |
| GOG     | Government of Ghana                                    |
| GPCI    | Global Parasite Control Initiative                     |
| HAART   | Highly Active Anti-Retroviral Therapy                  |
| HIV     | Human Immunodeficiency Virus                           |
| HRU     | Health Research Unit                                   |
| HSS     | HIV Sentinel Survey                                    |
| IDSR    | Integrated Disease Surveillance and Response           |
| IGF     | Internally-generated Fund                              |
| IMMPACT | Initiative for Maternal Mortality Programme Assessment |
| JICA    | Japan International Cooperation Agency                 |
| KHRC    | Kintampo Health Research Centre                        |
| MFEP    | Ministry of Finance and Economic Planning              |
| MOH     | Ministry of Health                                     |
| MTEF    | Medium Term Expenditure Framework                      |
| MTHP    | Medium Term Health Plan                                |
| NACP    | National AIDS/STI Programme                            |
| NHRC    | Navrongo Health Research Centre                        |
| NIH     | National Institute of Health                           |
| NMIMR   | Noguchi Memorial Institute for Medical Research        |

|           |  |
|-----------|--|
| NTP       | National Tuberculosis Program                      |
| POW       | Programme of Work                                  |
| PDM       | Project Design Matrix                              |
| PHRL      | Public Health Reference Laboratory                 |
| PPT       | Pre-Package Treatment                              |
| QA        | Quality Assurance                                  |
| QHP       | Quality Health Partners                            |
| SARS      | Severe Acute Respiratory Syndrome                  |
| SHARP     | Strengthening HIV/AIDS Response Partnership        |
| STI / STD | Sexually Transmitted Infection/Diseases            |
| STH       | Soil-transmitted Helminthiasis                     |
| TB        | Tuberculosis                                       |
| TDR       | Research and Training in Tropical Diseases         |
| TPHA      | Treponema Pallidum Haemagglutination Assay         |
| UNICEF    | United Nation Children's Fund                      |
| USAID     | United States Agency for International Development |
| VHF       | Viral Hemorrhagic Fever                            |
| WACIPAC   | West Africa Centre for Parasite Control            |
| WHO       | World Health Organization                          |

# Evaluation Summary

Evaluation conducted by: JICA Ghana Office

|   |  |
|---|--|
| <b>1. Outline of the Project</b>  |  |
| <b>Country:</b> The Republic of Ghana   | <b>Project title:</b> The Infectious Disease Project at Noguchi Memorial Institute for Medical Research (NMIMR) in Ghana |
| <b>Issue/Sector:</b> Health/Medical Care  | <b>Cooperation scheme:</b><br>Project-type Technical Cooperation   |
| <b>Division in charge:</b><br>Medical Cooperation Dept.<br>The Second Division  | <b>Total cost:</b> 676,000,000 yen   |
|   | <b>Partner Country's Implementing Organization:</b><br>Noguchi Memorial Institute for Medical Research (NMIMR)           |
| <b>Period of Cooperation:</b><br>From 1 January 1999<br>to 31 December 2003   | <b>Supporting Organization in Japan:</b><br>National Institute of Infectious Diseases, etc.                              |
| <p><b>Related Cooperation:</b></p> <p>Grant Aid:<br/>The Noguchi Memorial Institute Rehabilitation and Extension Project in the Republic of Ghana (1,260,000,000yen)</p> <p>Project-Type Technical Cooperation:<br/>Research on the diarrhoea and malnutrition (1980-86)<br/>Noguchi Memorial Institute Project (1986-1997)</p> <ul style="list-style-type: none"> <li>- Phase I: Research/Activities on the virology, epidemiology and nutrition (1986-91)</li> <li>- Phase II: Research on Vaccine Preventable Diseases, Persistent Diarrhoea, AIDS and Schistosomiasis (1991-97)</li> </ul>  |  |
| <p><b>1-1. Background of the Project</b></p> <p>The prevention and control of the infectious disease is one of the most serious problems for the Ghana health sector, as diseases such as malaria, diarrhoea, respiratory diseases are prevalent in the country. Besides, the countermeasure against HIV/AIDS (Human Immunodeficiency Virus/Acquired Immune-Deficiency Syndrome) has become an urgent problem, since its threat has been escalating. With the increasing prevalence of HIV/AIDS, the other opportunistic infectious diseases such as TB (Tuberculosis) have also been increasing. The Infectious Disease Project at NMIMR in Ghana was planned to cope with such a situation.</p> <p>Japan began the technical cooperation with the medical department of the University of Ghana in 1968. Based on its outcome, NMIMR was established by Japanese Grant Aid in 1979, where the technical cooperation was continued.</p> <p>At the end of "Noguchi Memorial Institute Project Phase II", the necessity to cope with the infectious diseases was advocated and the request for the technical cooperation concerning the study/countermeasure of HIV/AIDS and Vaccine Preventable Diseases was made. In response to the request, JICA started "The Infectious Diseases Project at NMIMR" from 1 January 1999.</p> |  |
| <p><b>1-2. Project Overview</b></p> <p>Unlike the former projects which focused on the development of research capability for basic medical sciences, this Project aimed at contributing more directly to public health issues; by giving NMIMR a foothold, through the development of its research and training capabilities, it aimed at the capacity development of health-related personnel who were concerned with countermeasures against infectious</p>  |  |

diseases sweeping in Ghana and improvement of their activities and policy-making process. For this sake, it was concerned not only with research capabilities but also with training capabilities and collaboration with other stakeholders to contribute to the policy-making process and the activities in Ghana Health Sector.

**(1) Project Goals**

**Hyper Goal:** The selected infectious diseases in Ghana are controlled.

**Super Goal:** Incidence and/or prevalence of the selected infectious disease in Ghana are reduced.  
(Control of the selected infectious diseases in Ghana is improved.)

**Overall Goal:** Recommendation from infectious diseases project has been adopted for implementation by 2004

**(2) Project Purpose**

Relevant research and training capability of NMIMR in collaboration with other public health institutions is strengthened.

**(3) Outputs**

- a) Molecular epidemiology of HIV/AIDS in Ghana is delineated.
- b) Epidemiology and etiology of STDs (Sexual Transmitted Diseases) in Ghana are delineated.
- c) TB reference and research laboratory in Ghana is established.
- d) Epidemiology and pathogenesis of the selected vaccine preventable diseases and the other/selected infectious diseases in Ghana are delineated.
- e) Bio-safety control system is established.
- f) Resources in infectious diseases research and control are developed.
- g) Global Parasite Control Initiative is implemented at NMIMR

**(4) Inputs (as of the Project's termination)**

**Japanese side:**

a) Personnel

Long-term Expert: 12  
Short-term Expert: 24  
Trainees received: 19

|                                   | Number of Total Months of Expert Dispatch) | Number of Total Months of Ghanaian Counterparts Training |
|-----------------------------------|--|--|
| Chief Advisors                    | 60   |  |
| Coordinators                      | 60   |  |
| HIV/AIDS                          | 37   | 17.5   |
| STD                               | 2  | 11.5   |
| TB                                | 27   | 12   |
| VHF                               | 1  |  |
| Schistosomiasis                   | 49   | 12   |
| Measles Apoptosis                 | 8  | 5  |
| Measles Surveillance              | 15   |  |
| Bio-safety                        | 3  | 3.5  |
| Laboratory Animal                 | 2  | 5.5  |
| GPCI                              | 19   |  |
| Maintenance of Referral Test Room |  | 2.5  |
| Management of Research Stations   |  | 1  |

b) Equipment: US\$624,000.-

c) Local cost: US\$1,093,918.-

(including consumables & reagents: US\$423,205.-)

**Ghanaian Side:**

a) Personnel

Counterpart: 41

|                      | Number |
|----------------------|--------|
| General Management   | 3      |
| HIV/AIDS             | 7      |
| STD                  | 4      |
| TB                   | 7      |
| VHF                  | 2      |
| Measles Apoptosis    | 3      |
| Measles Surveillance | 2      |
| Schistosomiasis      | 2      |
| Laboratory Animal    | 3      |
| Bio-safety           | 2      |
| Training             | 1      |
| Maintenance          | 1      |
| GPCI                 | 4      |

b) Expenses of Salaries, Equipment, Preparation and Maintenance of Facilities and Vehicles, VSAT Installation and Maintenance

|  |
|--|
| <p><b>2. Evaluation Team</b></p> <p><b>Members of Evaluation Team:</b><br/> JICA Ghana Office: Mr. Hiroshi Murakami (Resident Representative of JICA Ghana Office) and Mr. Yuji Wakasugi (Assistant Resident Representative of JICA Ghana Office), Ms. Satomi Shimizu (Project Evaluation Advisor) and Mrs. Marian Tadeffa-Kubabom (Local Consultant)</p> <p><b>Period of Evaluation Research:</b> from 8th February to 9th March 2007</p> <p><b>Type of Evaluation : Ex-post:</b> Ex-post Evaluation</p>  |
| <p><b>3. Results of Evaluation</b></p> <p><b>3-1. Summary of Evaluation Results</b></p> <p><b>(1) Impact</b></p> <p><u>Achievement Level of the overall goal:</u><br/> There were not sufficient available documents which can show the number and the contents of the recommendations from the Project and whether or not they were incorporated into the health policy in Ghana to be realized, since they have not always been recorded. Through the interviews and the discussion in the workshop, however, it was confirmed that NMIMR has been collaborating and interacting functionally/practically with MOH and GHS. Yet there is no legal link or institutional relationship between them and the collaboration has been being made according to rather ad hoc technical and financial necessities.</p> <p>The smooth adoption of NMIMR research recommendations by the MOH and GHS has been influenced by the trends of national programmes and donors' concerns because the country is highly dependent on the donors' support in the public health matters. In other words, it is the most effective way in a sense for NMIMR to present their own research achievements in response to national programmes or along donors' cooperation lines in order to continue and develop their research on infectious diseases with sufficient funds; hence, while the achievement of the overall goal of the project is a direct consequence of the achievement of the project purpose, NMIMR is able to develop its research capability by responding to the needs and trends of national programmes supported by donors. In that sense, the overall goal of the Project was achieved, but it can be one of the conditions for the sustainability of the project as well as a result of the achievement of the project purpose.</p> <p><u>Other Impact:</u></p> <ol style="list-style-type: none"> <li>i. Some secondary effects of the training activities have been recognized. Various training activities have enabled some of the trainees employed at different levels of NMIMR and the training in specialised disciplines has brought about the establishment of collaborative research programmes with beneficiary organisations and trainees.</li> <li>ii. The change in the incidence and prevalence level of each disease which this Project is intended for varies from disease to disease. But because the diseases whose prevalence is being controlled are more than those whose prevalence is becoming higher, the super and hyper goals of this Project are possibly being achieved. The present achievement level of the super and hyper goals as regards each disease is as follows: <ul style="list-style-type: none"> <li>- As for measles, the impact is high as the country has not experienced any deaths from measles for the past four years, it has been officially reported as having been controlled and the diagnostic capacity of NMIMR contributed to this achievement.</li> <li>- As for HIV/AIDS, TB and Schistosomiasis, although their incidence and prevalence has not been reduced to the extent as was expected at the planning stage, they are showing the decreasing trends; the 2005 HSS Report concluded that the overall prevalence in Ghana may be reaching a stabilization stage; although the prevalence and mortality rate of TB decreased only slightly and slowly, its cure rate</li> </ul> </li> </ol> |

increased from 55.1% in 2002 to 66.2% in 2005; the incidence cases of Schistosomiasis decreased from 9,834 in 2002 to 4,229 in 2006. The National Programmes on HIV/AIDS and TB have realized positive developments in controlling the disease with research and laboratory support from NMIMR. Concerning Schistosomiasis, there is no national programme and it is difficult to verify the causal relationship between the decrease of its prevalence and this Project.

- For the other two infectious diseases, that is, STDs and VHF (Viral Hemorrhagic Fever), the fact that their prevalence was controlled was not recognized; Syphilis, for which testing has been the most consistently observed among all STDs because it is an important co-factor for HIV transmission, recorded the highest level of prevalence in 2004 since the monitoring of syphilis under the HSS started; VHF prevalence level in Ghana did not change significantly although it has long been relatively lower than in its neighboring countries. It is thought that the results of this Project had no opportunities to be applied practically since neither significant national programme nor donors' funding support has been extended to these diseases.

## **(2) Sustainability**

### Research:

HIV/AIDS and TB are included among the diseases which the 2nd Health Sector Programme of Work (2002-2006) designated as priorities, and National Programmes have been being evolved, with which NMIMR is concerned. The research activities and the publications/presentations of research findings on these two diseases by NMIMR have been more active since the terminal evaluation. Therefore, only in these areas, the sustainability of the Project is high, while the researches on the other diseases have been relatively less done.

### Training:

NMIMR has been highly sustaining their training capacity. NMIMR has continued to provide training for post graduate students in medical research, undergraduates and public health personnel and the number of students trained at the NMIMR increased. Interest in the NMIMR training has also increased, as the number of applicants or enquiries for students' training/mentorship has increased about 50% annually in 2004-2006. Although the current number of personnel is enough to support the requisite training in infectious diseases, the expansion of scope in research to cover new diseases demands a corresponding increase in personnel to sustain the training components.

### Collaboration:

The sustainability of the Project concerning the collaboration with other health institutions and communities is high with reservations; Since 2003, NMIMR has been actively engaged with at least 4 national disease control programmes, particularly using its research, laboratory and training expertise. NMIMR has also provided active inputs on diseases that were not addressed by the Project, like Malaria and Polio, in collaboration with MOH and GHS. NMIMR has established a role within MOH and GHS specifically in areas of quality assurance testing, vaccine/drugs efficacy testing, confirmation of safety and efficacy of traditional medicine, training of laboratory personnel, prevalence, etymological and transmission studies of diseases, etc. But, although NMIMR's research findings have been disseminated to other health collaborators, for example through an Annual Review Meeting, there are no systematic documentations of critical discussion on public health issues, nor is there any groundwork to reach consensus; hence, the limited extent of collaboration.

### Financial Situation:

As GOG funds mostly serve the personnel emolument requirements of NMIMR and the institute is obliged to seek sources of revenue for other requirements externally (mainly to donors engaging NMIMR for certain researches), it is crucial for NMIMR to disseminate their research findings through presentation or

publication. In this situation, it can be said that NMIMR has been conducting such activities diligently; when this evaluation study was conducted, NMIMR was concerned with at least 17 projects supported by various international organisations or other donors, besides WACIPAC supported by JICA, and there were some projects among them which tackle the same diseases, like HIV/AIDS and TB, as this project.

Yet, although NMIMR's research results have been widely spread, for lack of any legal link or institutional relationship between NMIMR and other health-concerned institutes/organizations in Ghana, each budget support tends to be a single act and NMIMR's financial situation is liable to be influenced by the concerns or interests of other stakeholders.

### **3-2. Contributing Factors**

#### **(1) Factor that has contributed to Impact**

Because some national activities to tackle HIV/AIDS and TB have been continuing through National Programmes after the Project terminated, in which other donors also engage themselves, there have been a lot of opportunities for NMIMR to intervene and contribute to those activities directly by making full use of their research and training capabilities.

#### **(2) Factor that has contributed to Sustainability**

In Ghana NMIMR has the singular expertise in specialized laboratory diagnosis, possessing the equipment, the technique and the professional scientists; hence, NMIMR has already attained the country-wide fame and social status. There is much expectation of the role of NMIMR to address the critical diseases and the institute can attract considerable attentions from other stakeholders.

### **3-3. Inhibiting Factors**

#### **(1) Factors that have inhibited Impact**

- The insufficient human/financial resource and technique in MOH or GHS can make it difficult for them to recognize the significance of research findings of NMIMR as well as utilize them for decision-making.
- The Project Purpose includes the phrase of "in collaboration with other public health institutions" and the statement of "Major stakeholders remains committed to the Project" is among the important assumptions. Yet NMIMR does not have any legal or structural linkage with other public health institutions. Stakeholders should, therefore, have considered and contrive substantial and concrete measures to realize the collaboration during the planning stage. Provided that some activities and outputs had been incorporated into the contents of this Project in advance, each stakeholder would have deliberated this point more consciously, so that the achievement level of the overall goal could have been enhanced.

#### **(2) Factor that has inhibited Sustainability**

- NMIMR needs more staff to implement its very important research role.
- The poor infrastructure, especially the long-running electricity crises in Ghana is bringing about faster depreciation of facilities.

### **3-4. Conclusions**

The impact and the sustainability of the Project are recognized with reservation.

The status of NMIMR as an autonomous Ghanaian medical research facility, collaborating with as many local and international organizations in medical-related researches has been unchanged since the terminal evaluation. It can even be said that NMIMR has grown in strength since the time of the terminal evaluation, establishing functional relationship with MOH and GHS. But the extent of the success of the Project has been influenced by the conditions of fund acquisition, hence by the concerns and interests of donors. This is also true of the institutional sustainability of NMIMR. The institute has to continue to develop the capacity to mobilize research funds that would reduce their dependence on donors.

### **3-5. Recommendations**

- (1) The Annual Review Meeting of NMIMR and Annual Research Dissemination Forum of the HRU (Health Research Unit) should incorporate mechanism for consensus-building on policy implications and research requirements, as well as follow-up steps to ensure continuity of decision-making; more ideally, legally framed institutional linkage between MOH, GHS and NMIMR should be given in order to establish a public health research agenda that balances scientific research and operational research;
- (2) NMIMR should prepare and make always available the documents which summarize concisely their past research achievements and contributions to the nation's health policy so as to be able to represent clearly its own activities and significance publicly.
- (3) NMIMR should review the option to improve the management of IGF (Internally-Generated Fund). The institutional research status of NMIMR, both locally and internationally, commands service rates that would cover actual cost of production and maintenance. Yet current charges for the use of facilities and acquisition of supply (e.g. animal models) remain at subsidized levels and NMIMR renders various services utilizing its capacities without charging enough/necessary fees.
- (4) Areas of capacity building needed at present for the NMIMR should be identified for future planning by NMIMR, as well as for donors who may wish to support the role of NMIMR in the health sector.
- (5) Both NMIMR and JICA should consider the principles of equal partnership for any future collaboration. After its establishment, Japan continuously supported NMIMR through a technology-transfer type of cooperation, so that NMIMR developed its own capabilities to be able to conduct researches independently. This Project, therefore, focused on the direct contribution of NMIMR to public health issues. There is, however, an impression that the project was implemented without clearing off the former style, a technology transfer type of cooperation. Now the personnel of both NMIMR and JICA should intend more deliberately to be premised on mutual trust, transparency, and accountability, to think of the ownership of NMIMR, and to respond to the priorities of NMIMR in the implementation of their mandate to support the aims of government to promote public health. Administrative systems should be also reviewed and enhanced, if necessary, in order to ensure that these principles are upheld.

### **3-6. Lessons Learned**

- (1) In case of a research/academic technical cooperation project/programme, an organization which conduct researches/academic studies and one which makes policies or applies research/study findings practically may often be situated separately. Therefore the legal relationship among stakeholders and fund flows should be considered and analyzed fully during planning stages. Significant assumptions should be also set on the bases of such consideration and analysis.
- (2) The project planning stage should incorporate formal agreements between JICA and counterparts on the implementation of various levels of evaluation relating to the project. Roles, responsibilities, information required, and timing should form part of the agreement. JICA can also review the approach used by other donors wherein evaluation is one of the major outputs listed in the PDM. In this manner it becomes integrated in the overall planning and targeting.



## 事後評価調査結果要約表

評価実施部署：ガーナ事務所

|  |                           |
|--|---------------------------|
| <b>1. 案件の概要</b>  |                           |
| 国名： ガーナ共和国   | 案件名： 野口記念医学研究所感染症対策プロジェクト |
| 分野： 保健・医療  | 案件形態： プロジェクト方式技術協力        |
| 所轄部署： 医療協力部 医療協力第2課  | 協力金額： 6億7,600万円           |
| 協力期間：  | 先方関係機関： 野口記念医学研究所         |
| 1999年1月1日～2003年12月31日  | 日本側協力期間： 国立感染症研究所、等       |
| <p>他の関連協力：<br/>無償資金協力： 野口記念医学研究所改善計画(12億6,000万円)<br/>技術協力：<br/>プロジェクト方式技術協力 「下痢症と栄養不良に関する研究」(1980-86年)、<br/>プロジェクト方式技術協力 「野口記念医学研究所プロジェクト」(1986-97年)<br/>フェーズ1： ウィルス学、疫学及び栄養学に係わる研究・活動(1986-91年)、<br/>フェーズ2： ワクチンにより予防可能な疾病、下痢症、エイズ及び住血吸虫症に関する研究(1991-97年)</p>   |                           |
| <p><b>1-1. 協力の背景と概要</b></p> <p>ガーナ共和国においては、マラリア、下痢症、呼吸器疾患等の感染症が深刻であり、感染症対策が保健セクターの主要な課題となっている。また、HIVエイズ(ヒト免疫不全ウィルス・後天性免疫不全症候群)の脅威が拡大しており、それに伴う結核等の日和見感染症も増大しているため、それらの対策も緊急課題である。このような事態に対処すべく、野口記念医学研究所感染症対策プロジェクトが計画された。</p> <p>1968年以来、日本はガーナ大学医学部と技術協力を行ってきた。その成果のもと、1979年、野口記念医学研究所が日本の無償資金援助で設立され、同研究所をカウンターパートとした技術協力が展開された(上欄「他の関連協力」参照)。</p> <p>「野口記念医学研究所プロジェクト・フェーズ2」の終了時、感染症対策の必要性が提唱され、ワクチンにより予防可能な疾病及びHIV・エイズに関する研究・対策に係わる技術協力が要請された。同要請に答え、1999年1月1日からJICAは「野口記念医学研究所感染症対策プロジェクト」を開始した。</p> |                           |
| <p><b>1-2. 協力内容</b></p> <p>基礎医学研究能力向上を主眼とした初期のプロジェクトとは異なり、本プロジェクトは、公衆衛生問題への直接貢献することを目指すものである。すなわち、野口記念医学研究所を拠点として、同研究所の研究・研修能力の向上させることを通じて、ガーナに蔓延している感染症への対策に携わる保健医療従事者(ガーナ保健省やガーナ保健サービス等)の能力向上や政策・活動の改善を目的としている。そのため、本プロジェクトの内容には、研究能力及び研修能力の向上のみならず、同研究所と他のステークホルダーとの連携が強化され、同研究所がガーナ保健セクターの政策決定プロセスや活動に貢献することが組み込まれている。</p>   |                           |
| <p><b>(1)プロジェクト上位目標</b></p> <p>ハイパーゴール： ガーナにおいて本プロジェクトで対象とした感染症が抑制される。<br/>スーパーゴール： ガーナにおいて本プロジェクトで対象とした感染症の発生率及び(又は)流行が減少する(ガーナにおいて本プロジェクトで対象とした感染症の抑制策が改善される)。<br/>上位目標： 本プロジェクトからなされた提言が2004年までに実施に移される。</p>  |                           |

## (2)プロジェクト目標

野口記念医学研究所が他の公衆衛生機関と連携して感染症対策に関する研究能力と研修能力を向上させる。

## (3)成果

- ① HIVエイズの分子疫学的特長が明らかになる。
- ② 性感染症の疫学・病因学的特徴が明らかになる。
- ③ 結核のレファレンス及び研究のための検査室が確立される。
- ④ ワクチンにより予防可能な疾病やその他の感染症(ウイルス性出血熱、麻疹アポトーシス、麻疹サーベイランス及び住血吸虫症)の疫学・病因が明らかになる。
- ⑤ バイオセーフティーコントロールシステムが確立される。
- ⑥ 感染症研究・対策のための資源が開発される(実験動物、中堅技術者など)。
- ⑦ 国際寄生虫対策イニシアティブが野口記念医学研究所で実施される。

## (4)投入

### 【日本側】

- ①人的投入： 長期専門家派遣(12名)  
短期専門家派遣(24名)  
研修員受入れ(19名)

|            | 専門家派遣<br>(のべ月数) | 研修員受入れ<br>(のべ月数) |
|------------|-----------------|------------------|
| チーフアドバイザー  | 60              |                  |
| 調整員        | 60              |                  |
| HIV エイズ    | 37              | 17.5             |
| 性感染症       | 2               | 11.5             |
| 結核         | 27              | 12               |
| ウイルス性出血熱   | 1               |                  |
| 住血吸虫症      | 49              | 12               |
| 麻疹アポトーシス   | 8               | 5                |
| 麻疹サーベイランス  | 15              |                  |
| バイオセーフティー  | 3               | 3.5              |
| 実験動物       | 2               | 5.5              |
| 国際寄生虫対策    | 19              |                  |
| レファレンスラボ管理 |                 | 2.5              |
| 研究所管理      |                 | 1                |

- ②機材供与： 62万4,000米ドル
- ③ローカルコスト負担： 109万3,918米ドル  
(うち試薬・消耗品費 42万3,205米ドル)

### 【ガーナ共和国側】

- ①カウンターパート配置： 41名

|           | 人数 |
|-----------|----|
| 管理        | 3  |
| HIV エイズ   | 7  |
| 性感染症      | 4  |
| 結核        | 7  |
| ウイルス性出血熱  | 2  |
| 麻疹アポトーシス  | 3  |
| 麻疹サーベイランス | 2  |
| 住血吸虫症     | 2  |
| 実験動物      | 3  |
| バイオセーフティー | 2  |
| 研修        | 1  |
| 維持管理      | 1  |
| 国際寄生虫対策   | 4  |

- ②人件費、機材調達費、施設提供、設備及び  
車輛維持管理費、VSAT 設置及び維持管理  
費

## 2. 評価調査団の概要

評価調査団： 国際協力機構ガーナ事務所 村上博(事務所長)、若杉裕司(農村開発一班長)、  
清水郷美(在外評価専門員)及びマリアン・テデファ・クバボム(ローカル・コンサルタント)

評価調査期間： 2007年2月8日～3月20日

評価種類： 事後評価

## 3. 評価結果の概要

### 3-1. 評価結果の要約

#### (1)インパクト

上位目標の達成度：

本プロジェクトからなされた提言の数及びその内容、そしてそれらがガーナ国の保健政策に組み込まれて実施され

たか否かについては、必ずしも記録されてこなかったため、それを実証的に表す文書を得ることができなかった。しかしながら、インタビューやワークショップにおけるコミュニケーションの取り方や議論の内容から、同研究所が保健省及びガーナ保健サービスと実務レベルにおいて連携しており、相互作用していることが確認された。ただし、両者間に法的・制度的関係性は全くなく、その連携の仕方は、技術的あるいは財政上の必要に応じたものであるようである。

公衆衛生分野における当国のドナーへの依存度は高いため、同研究所の提言が保健省及びガーナ保健サービスによって滞りなく採用されるか否かは、ドナーの支援を受けた国家プログラムが行われているかどうかによって影響されている。つまり、野口記念医学研究所にとっては、十分な資金をもって感染症に係る研究を継続し発展させるためには、国家プログラムやドナーの協力を呼応する形で自らの研究成果を提示していくことが最も確実な方法なのである。ついては、本プロジェクトの上位目標の達成は、プロジェクト目標の直接的な帰結であるが、逆の視点から言えば、野口記念医学研究所は、ドナーに支援を受けた国家プログラムにおける方針や力関係に応じることで、その研究能力を発展させることができるとも言える。その意味で、本案件の上位目標は達成されたが、それは、本プロジェクト目標の直接的な帰結であると同時に、本プロジェクトの持続性を確保するための条件になっている。

#### その他:

- ① 研修の副次効果が認められた。研修生の中には、同研究所内の何らかのポストに雇用される者があり、受益者組織と研修生と共に幾つかの共同研究プログラムが設けられた。
  - ② 本プロジェクトで対象とした各疾病の発生・蔓延については、以下の通りであった。発生・蔓延率の推移は疾病ごとにかかなりの相違が見られるが、増加傾向にある疾病よりも抑制されつつある疾病の方が多く、ついては、今後、スーパーゴール及びハイパーゴールが達成される見込みはあると考えられる。
- 麻疹については、高いインパクトが認められた。過去4年間、当国では麻疹による死亡はなく、蔓延が食い止められたことが公式発表されており、そこには本プロジェクトで高められた野口記念医学研究所の診断能力が貢献したことが認められた。
  - HIV エイズ、結核症及び住血吸虫症に関しては、目標値には未だ至っていないが、その発生・蔓延が抑制されつつあると考えられる。HIV エイズに関しては、その発生率は著しい減少傾向を表していないものの安定期に入りつつあるという調査報告(2005年)があり、結核症については、その発生率と死亡率はゆるやかな減少を示しているにすぎないが、治療率が2002年55.1%、2005年66.2%という具合に向上した。住血吸虫症の発生は2002年9,834件、2006年4,229件と減少した。とりわけ前2者については、同研究所の研究能力や施設によって抑制されつつあることが認められてきており、これらの疾病対策を行っている国家プログラムは成果を上げつつある。住血吸虫症については、2002年以降国家的な取り組みがなく、蔓延率は減少しているが、その因果関係の検証は困難である。
  - 性感染症及びウィルス性出血熱については、その発生・蔓延が抑制されつつある事実が認められなかった。性感染症の中で最も注意深く観察されてきたものは梅毒であるが、梅毒は2004年に過去最高の発生率を記録した。ウィルス性出血熱は、近隣国と比較すれば蔓延率がもともとあまり高くなく、横ばい傾向にある。これらの疾病について、主要な国家プログラムやドナーによる資金助成がなく、本プロジェクトの成果が応用される機会がなかったと考えられる。

#### (2) 自立発展性

研究: HIV エイズ及び結核症は、当国の保健セクター5ヶ年計画(2002-06年)においても優先度の高い疾病に位置づけられている。これら2疾病及び麻疹については、国家プログラムが展開されており、野口記念医学研究所がこれらの国家的な取り組みに関与しており、研究及びその出版・発表状況は、終了時評価時以上に活発になっている。ついては、その限りにおいて、本プロジェクトの自立発展性は高い。他方、他の疾病に関する研究は比較的少ない。

研修: 同研究所の研修能力については、本プロジェクトの自立発展性は極めて高い。同研究所は、医学研究分野の大学院生、大学生及び公衆衛生機関スタッフを対象に研修を継続している。研修生数は増加し、同研究所が提供する研修への志願者や問い合わせの数は、2004年から2006年にかけて年率約50%で増加し、周囲の関心度も増した。現在のところ、感染症対策に必要な研修事業を推進するのに十分な人材も確保されている。ただし、最近新たに注目されている疾病をも取り込んで研修領域を拡大していくためには、それに見合う人材の補充が必要であ

る。

**連携:** 以下の理由により、他の保健関連機関や関係者との連携・共同作業については、留保付きで高いと言える。2003 年以来、同研究所は研究・研修技術や施設を駆使して、少なくとも4つの国家疾病対策プログラムに積極的に参与し、また、マラリア、ポリオ等、本プロジェクトで取り扱わなかった疾病についても、保健省やガーナ保健サービスと連携しながら積極的な投入を行った。とりわけ、品質保証試験、ワクチン・薬品有効性試験、伝統薬の安全性と有効性の確証、実験室スタッフの育成、疾病の流行及び病因・伝染媒介に関する研究においては、保健省及びガーナ保健サービスにおいて同研究所が果たす役割が、既に承認されている。

しかし、同研究所の研究結果が他の連携保健機関に広められてきているものの、公衆衛生問題に関する議論を文書化する体系だった方法はなく、コンセンサスを確保するための基盤もなく、故に連携の程度には限りがある。

**財政面:** 本評価調査時、同研究所は、JICA の協力による WACIPAC (West African Centre for International Parasite Control) の他に、少なくとも 17 件のプロジェクトに関し、国際機関や他のドナーによる支援を受けていることが判明した。その中には、HIV エイズや結核症等、本プロジェクトで取り扱った疾病対策を行うものが含まれている。ガーナ政府が同研究所にあてがう費用は人件費に留まっているので、同研究所はその他の経費を外部の財源(主として、何らかの研究のために同研究所と関わりを有するドナー)から確保しなければならず、自らの研究結果を公表してアドボカシーを行うことが極めて肝要であるが、その活動は順調に行われてきたと考えられる。

しかし、同研究所の研究結果が対外的に広められてきていても、ガーナ国内の他の保健機関との制度的・法的関係が規定されているわけではないため、各々の財政的支援は単発的なものになりがちで、財政状況は他のステークホルダーの関心に影響されやすい。

### 3-2. プロジェクトの促進要因

#### (1) インパクト発現を促進した要因

• HIV エイズや結核症等への対策は、本プロジェクト終了後も、当国の国家プログラムとして展開されており、他のドナーも参与していることから、野口記念医学研究所の研究・研修能力の高さが直接貢献できる機会が多くあった。

#### (2) 自立発展性強化を促進した要因

• 同研究所が有する施設・人材・技術レベル、特に診断・実験における専門性は、当国内で突出しており、同研究所の社会的地位はほぼ確立されている。したがって、当国内の致命的な疾病対策において同研究所に寄せられる期待は高く、他のステークホルダーからの注目度が高い。

### 3-3. プロジェクトの阻害要因

#### (1) インパクト発現を促進した要因

• 保健省及びガーナ保健サービスは、人的・財政的資源や技術力が不足しがちであり、同研究所の研究結果の意義を認識し、意思決定のためにそれらを活用していただくだけの余裕が必ずしもあるわけではない。

• プロジェクト目標に他の公衆衛生機関との連携が謳われており、主要なステークホルダーが本プロジェクトに参与し続けることが外部条件にも記載されている。しかし、同研究所は公衆衛生機関との法的・組織的關係性を有しないところ、いかにしてこのような連携が可能となるのかにつき、実質的且つ具体的な方策が計画段階において策定されるべきであった。仮に連携を可能にするための活動及びアウトプットがプロジェクトの内容に予め盛り込まれていたとすれば、各ステークホルダーは、より意識的にこの問題を捉え、その結果、上位目標の達成度がより高くなった可能性がある。

#### (2) 自立発展性強化を促進した要因

• 野口記念医学研究所は、若干の人材不足問題を抱えている。

• 当国における脆弱なインフラストラクチャー、とりわけ長期に渡る電力供給の不安定さによって、施設の減価償却が加速されている。

### 3-4. 結論

本プロジェクトのインパクト及び自立発展性は、若干の留保付きで高いと認められた。独立した医学研究施設としての野口記念医学研究所の地位は終了時評価以来変わらず、実務・機能面では保健省及びガーナ保健サービスと

の関係が構築されたことから、むしろ勢力を増したとも言える。しかし、本プロジェクトの成功の度合いは資金の調達状況によって影響を受けており、引いてはステークホルダーやドナーの関心の動向に左右されやすくなっている。同様のことは、同研究所そのものの存続・自立発展性にも当てはまる。同研究所は、ドナーへの依存度を縮小させつつ研究費を動員できるような方向性で、キャパシティ・ビルディングに努めていかねばならない。

### 3-5. 提言

- (1) 野口記念医学研究所の年次レビュー・ミーティング及びガーナ保健局の保健研究ユニット(HRU)年次研究発表フォーラムは、意思決定の連続性を確保するために、政策、研究要件及びフォロー・アップに関するコンセンサスを構築するためのメカニズムを組み込むべきである。さらに、理想的には、科学的研究と実施研究との釣合いがとれた研究課題を打ち出すため、保健省、ガーナ保健サービス及び同研究所間の連携に法的枠組みを与えることが望ましい。
- (2) 野口記念医学研究所は、研究所全体の取り組みや存在意義を対外的に明示できるように、過去の実績や保健政策への貢献をまとめた資料を常時用意しておくべきである。
- (3) 野口記念医学研究所は、研究所内で産出される資金(IGF)のマネジメント方法を再考すべきである。国内外における同研究所の地位からすれば、施設維持管理のため実費を賄う程度の料金を徴収できるはずであるが、それにもかかわらず、現行のIGFは補助レベルにしか捉えられておらず、同研究所は様々な能力を駆使したサービスを無料又は必要以上に安価に提供している。
- (4) 野口記念医学研究所は、今後の計画のために、また同研究所の支援を考えているドナーのために、現在キャパシティ・ビルディングが必要とされる分野を見極めるべきである。
- (5) 野口記念医学研究所と JICA は、今後の協力のために、対等のパートナーシップの原則を検討すべきである。同研究所設立以来、日本は技術移転型の協力を行ってきたが、それは既に十分な成果を示し、同研究所は独立して研究を推進できるレベルにまで能力を高めてきた。それ故、本プロジェクトにおいては、公衆衛生問題に直接貢献することを目指したが、双方共に以前の技術移転型の協力形態を引きずった様式でプロジェクトが実施されてしまった印象がある。今後は、相互の信用関係、透明性及びアカウンタビリティを前提とし、同研究所のオーナーシップを尊重し、ガーナ国の保健政策の中で同研究所が使命を果たせるように、より意識的に努めるべきである。対等のパートナーシップの原則基盤を整えるために、必要に応じて運営管理体制の見直しもなされるべきである。

### 3-6. 教訓

- (1) 科学的・学術的研究に関する技術協力プロジェクト・プログラムの場合、科学的・学術的研究を行う組織と政策を決定する組織や研究結果を実施に応用する組織とが別々の立場に置かれていることがしばしばである。ついては、計画段階において、ステークホルダー間の法的関係性や資金の流れに関する十分な考察と分析が行われなければならない。外部条件も、これらの考察と分析に基づいて設定されるべきである。
- (2) プロジェクトの計画段階は、そのプロジェクトについて行われる様々なレベルの評価の実施につき、JICA とカウンターパートとの間で、評価における役割、責任、必要な情報、評価のタイミング等も含んだ公式な同意を組み込んでいることが望ましい。ドナーによっては、評価を PDM に記されたアウトプットの中に盛り込み、全体のプロジェクト形成に組み込んでいるところもあるところ、JICA が他のドナーによって使用されている様々なアプローチを再考することも可能であろう。



Ex-post Evaluation Report  
on the Infectious Disease Project at Noguchi Memorial Institute  
for Medical Research (NMIMR) in Ghana

## **1. SCOPE OF EVALUATION STUDY**

The Japan International Cooperation Agency (JICA) Ghana office has conducted an ex-post evaluation of the Infectious Diseases Project, a technical cooperation project between JICA and the Noguchi Memorial Institute for Medical Research (NMIMR) that was implemented from 1st January 1999 to 31st December 2003. The evaluation study was expected to verify the important issues relating to the project impact and sustainability observed three years after the implementation of the project.

Areas studied to determine project impact included the extent of achievement of the super goal, hyper goal, and overall goal as identified in the latest logical framework or project design matrix (PDM) exhibited in Annex 1. Factors that contributed and inhibited the achievement of these goals were also identified, as well as the general influence in the public health sector. The possibility of enhancing any gains in the area of disease control was also explored.

Sustainability concerns included the manner by which NMIMR maintained the project purpose and outputs three years after their accomplishment. A look at how project activities and services were maintained by NMIMR was also targeted. Factors contributing or inhibiting the sustainability of project effects were assessed, covering such areas as government research policies and other relevant policies affecting research in public health, management, administrative, and resource capacity NMIMR, and the mechanism through which transferred techniques can be further disseminated.

A Review Report accompanied this evaluation study essentially bringing out a clear description of NMIMR's recent activities and its position/role in Ghana's health sector.

## **2. PROJECT OVERVIEW**

### **2.1 BACKGROUND OF THE PROJECT**

The prevention and control of the infectious disease is one of the most serious problems for the Ghana health sector, as diseases such as malaria, diarrhoea, and respiratory diseases are prevalent in the country. Besides, the countermeasure against HIV/AIDS (Human Immunodeficiency Virus/Acquired Immune-Deficiency Syndrome) has become an urgent problem, since its threat has been escalating. With the increasing prevalence of HIV/AIDS, the other opportunistic infectious diseases such as TB (Tuberculosis) have also been increasing. The Infectious Disease Project at NMIMR in Ghana was planned to cope with such a situation. Japan began the technical cooperation with the medical department of the University of Ghana in 1968. Based on its outcome, NMIMR (Noguchi Memorial Institute for Medical Research) was established by Japanese Grant Aid in 1979, where the technical cooperation was continued.

At the end of “Noguchi Memorial Institute Project Phase II”, the necessity to cope with the infectious diseases was advocated and the request for the technical cooperation concerning the study/countermeasure of HIV/AIDS and Vaccine Preventable Diseases was made. In response to the request, JICA (Japan International Cooperation Agency) started “The Infectious Diseases Project at NMIMR” from 1 January 1999.

## **2.2 SUMMARY OF THE PROJECT**

The Infectious Diseases Project was intended to contribute to the control of selected infectious diseases experienced in Ghana, namely: HIV/AIDS, Sexually-Transmitted Diseases (STD), Tuberculosis (TB), Viral Hemorrhagic Fevers (VHF), Measles, and Schistosomiasis.

This Project aimed at contributing directly to the public health issues, in the point of which it is different from the former NMIMR-JICA projects which focused more on the development of research capabilities for basic medical sciences. By giving NMIMR a foothold, through the development of its research and training capabilities, it aimed at the capacity development of health-related personnel who were concerned with countermeasures against infectious diseases sweeping in Ghana and improvement of their activities and policy-making process. For this sake, it is concerned not only with research capabilities but also with training capabilities and collaboration with other stakeholders to contribute to the policy-making process and the activities in Ghana Health Sector.

The goals of the project were stated as follows:

- Hyper Goal: The selected infectious diseases in Ghana are controlled.
- Super Goal: Incidence and/or prevalence of the selected infectious disease in Ghana are reduced.
- Overall Goal: Recommendation from infectious diseases project has been adopted for implementation by 2004

Based on the logical framework that presents project aims as a hierarchy of objectives, these above goals are possibly achieved through the contribution of several factors, one of which is successful achievement of the project purpose, which was stated as follows:

- Project Purpose: Relevant research and training capability of NMIMR in collaboration with other public health institutions is strengthened.

A terminal evaluation in July 2003 concluded that there was a successful achievement of the Project Purpose as indicated by the following, among others:

- i. Increased number of publications, manuals and guidelines on the selected infected diseases, generated by NMIMR;
- ii. Increase in external research grants;
- iii. Targeted NMIMR training have been accomplished; and,
- iv. Close collaboration was achieved with the National HIV/AIDS Control Programme (NACP), the National Tuberculosis Programme (NTP), the Public Health Reference Laboratory (PHRL), the Health Research Unit, Ghana Health Service (HRU-GHS), and international organizations like the World Health Organization (WHO), UNICEF, National Institute of Health in the USA (NIH), European Union (EU), DANIDA, Wellcome Trust, the Bill and Melinda Gates Foundation, etc.



The following were the outputs during the course of the 5 year cooperation:

- 1) Molecular epidemiology of HIV/AIDS in Ghana is delineated;
- 2) Epidemiology and etiology of STDs (Sexual Transmitted Diseases) in Ghana are delineated;
- 3) TB reference and research laboratory in Ghana is established;
- 4) Epidemiology and pathogenesis of the selected vaccine preventable diseases and the other/selected infectious diseases in Ghana are delineated;
- 5) Bio-safety control system is established;
- 6) Resources in infectious diseases research and control are developed; and,
- 7) Global Parasite Control Initiative is implemented at NMIMR.

### **3. EVALUATION METHODS USED**

The basis of data and information gathering for the study was an evaluation grid developed together by the JICA Evaluation Team, which included:

- Team Leader: Mr. Hiroshi Murakami, Resident Representative, JICA Ghana Office
- Evaluation Planning and Management: Mr. Yuji Wakasugi, Assistant Resident Representative, JICA Ghana Office
- Evaluation Planning, Analysis and Reporting: Ms. Satomi Shimizu, Project Evaluation Advisor, JICA Ghana Office
- Evaluation, Analysis and Reporting: Marian Tadeffa-Kubabom, Consultant.

The Evaluation Grid (Annex 2) laid down the specific questions and indicators that would support assessment of impact and sustainability. Conducted between the 8th to 23rd February, the study utilized mainly review of available literature, including those accessible via the internet, and one on one interviews with NMIMR personnel, officers from the relevant public health agencies including the following:

- a. National TB Programme;
- b. Public Health Division, Ministry of Health (MOH);
- c. Health Research Unit, GHS;
- d. National Aids and STI Programme;
- e. Ghana Aids Commission;
- f. Chief Medical Officer, MOH;
- g. Public Health Reference Laboratory; and
- h. District Health Directorate, Dangme East District.

Talks were also held with international partners such as the WHO, UNICEF, DFID, and the EU. Attempts to get insights from other partners like USAID, Quality Partners, and DANIDA was not successful because of unavailability of the relevant officers at the time of the data-gathering.

A Questionnaire was also given out to Unit Heads for accomplishment. In all, 6 Interviews were done with NMIMR staff. Annex 3 lists down all persons interviewed.

An ex-post evaluation workshop was conducted on the 20th of March 2007 bringing together NMIMR and other stakeholders from the health sector to discuss the initial findings of the study. Annex 4 shows the Agenda and the list of workshop participants. The deliberations served to

validate the assessment of impact and sustainability, as well as touched on the issues that contribute positively and negatively to the targeted goals of the project. Clarification on specific data and information used in the study proved very useful. The presence of representatives from the MOH and GHS enriched the discussion around policy and institutional issues that are crucial to the findings of the evaluation.

### **3.1 LIMITATIONS**

The fixed time frame for information gathering did not fit well with the schedules of NMIMR Management and Unit Heads, Research Fellows who conduct multiple roles including lecturing, supervision of laboratory work, and simultaneous research activities.

Also, due to unexpected developments, there were simultaneous missions to NMIMR from Japan that affected the evaluation to some extent. The evaluation could have highlighted more findings if the following data were available: a) funds received and made available for research and other Institute activities between 2004 -2006; b) donors and donor projects during the period; c) types and number of training courses offered; d) status of equipment; etc.

In order to fill in the gaps and substantiate the evaluation findings, alternative sources were sought through past NMIMR reports, institutional information from the internet, documents from partners, both government and the donors, etc.

## **4. RESULTS OF EVALUATION**

### **4.1 IMPACT: ACHIEVEMENT LEVEL OF PROJECT OVERALL GOAL**

The Project Goal expects that recommendations on infectious diseases made by NMIMR are to be adopted by MOH and GHS. From the interviews and literature review done so far, it would seem that the extent of achievement of this goal could only be measured indirectly. There were not sufficient available documents which can show the number and the contents of the recommendations from the Project and whether or not they were incorporated into the health policy in Ghana to be realized, since they have not always been recorded. Through the interviews and the discussion in the workshop, however, it was confirmed that NMIMR has been collaborating and interacting functionally/practically with MOH and GHS. Yet there is no direct structural and operational link between the Institute and the MOH and GHS, and the collaboration has been being made according to rather ad hoc technical and financial necessities. NMIMR is a unit under the Ministry of Education (MOE), as such does not have any accountability towards MOH, and MOH does not have any control over NMIMR.

The smooth adoption of NMIMR research recommendations by the MOH and GHS has been influenced by the trends of national programmes and donors' concerns because the country is highly dependent on donors' support in the public health matters. In other words, it is the most effective way in a sense for NMIMR to present their own research achievements in response to national programmes or along donors' cooperation lines in order to continue and develop their research on infectious diseases with sufficient funds; hence, while the achievement of the overall goal of the project is a direct consequence of the achievement of the project purpose,

NMIMR is able to develop its research capability by responding the needs and trends of national programmes supported by donors. In that sense, the overall goal of the Project was achieved, but it can be one of the conditions for the sustainability of the project as well as a result of the achievement of the project purpose.

Adoption by the MOH and GHS of policy or strategy recommendations generated from laboratory tests and/or researches of NMIMR (or any other research institution) will depend on several factors:

- i. MOH and GHS has structured disease control programmes that are adequately funded to:
  - a. Effectively mobilize the support of such technical/professional bodies like NMIMR that are considered part of the public service sector; and/or
  - b. Support the research and laboratory requirements of NMIMR to perform research, either basic scientific or applied/operational researches, that are critical to the achievement of the aims of the respective Programmes;
- ii. Extent of dissemination of independent research findings by NMIMR.
- iii. Extent of identification of the research agenda by the MOH and GHS, and dissemination of this agenda;
- iv. MOH and GHS understanding of the science behind certain health issues (e.g. comparing treatment methods) and their capacity to follow through the actions necessary to implement identified potential recommendations;
- v. Cost of introducing a health intervention, especially considering the sustainability aspect; and
- vi. Branding or advertising strategy, of drugs for instance, and the accompanying costs (e.g. a manufacturer has combined 2 drugs in one).

#### **i) GHS Disease Control Programmes**

Since 2003, the Institute has been actively engaged with at least 4 national disease control programmes, particularly using its research, laboratory, and training expertise. Such relationships necessarily lead to the adoption of research and/or laboratory findings and recommendations, particularly because they are characterized by collaborative undertaking by all stakeholders.

The collaboration areas for HIV/AIDS-STI and TB have been described under Section 4.1.1. In addition, these 2 programmes have engaged NMIMR in certain research areas that supported programme implementation. Among these researches were:

- a. Study the safety and clinical acceptability of particular herbal medicine claimed to be a cure for HIV/AIDS or its syndromes. This study has led to the establishment of Protocols in handling herbal medicines and practitioners, and a Traditional Medicine Unit at the MOH, charge with screening curative proposals for confirmation with NMIMR;
- b. Natural HIV-1 drug resistance to antiretroviral drugs in Ghanaians (with Korle-Bu Teaching Hospital, Atua Government Hospital, NACP, National Micro Centre, Institute of Health Carlos III, Madrid, Spain)
- c. Laboratory Study on Archived Samples: Estimating HIV Incidence Rates Among Pregnant Women (with Strengthening HIV/AIDS Response Partnership or SHARP; PHRL; NACP;
- d. Nationwide survey of STI prevalence and drug sensitivity, a collaboration project among

- NACP, HRU, and NMIMR, with WHO funds. The study aims to inform the decision to change the current policy limiting prescriptions on STI antibiotics to medical officers;
- e. Tuberculin survey of Ghanaian school children that provided data for planning, modification, and evaluation of the NTP; and
  - f. Anti-TB drug resistance surveillance and molecular epidemiology

For diseases that were not addressed by the project, but, the Institute has nevertheless provided active inputs in collaboration with MOH and GHS, the following were the activities:

**National Malaria Control Programme**

- a. Initiated a study that showed malaria vector resistance to chloroquine. This has led to a change in policy that shifted medication for patients to a combination drug containing amodiaquine and artesunate;
- b. Perform drug efficacy testing;
- c. Monitor malaria vector resistance to insecticides used in treating the net in the country; and
- d. Support the preparation of field sites for epidemiological studies including trials for malaria vaccine.

**National Polio Programme:**

Viral isolation for all stool samples

Other activities include:

Igm testing (viral isolation) for poliomyelitis;

Leishmaniasis “sandfly” surveillance in the Volta Region;

Collaborative study on Onchochieriasis and drug resistance at the GHS Hohoe Oncho Centre

**ii) Dissemination of NMIMR Independent Research Findings**

The researches done by NMIMR personnel for the MOH and GHS Programmes are submitted and discussed directly with the Programme management and staff. Outside of these Programmes, researches done within the Institute are submitted to the institutions that funded the researches, and eventually may get to be published in international or local scientific/academic journals. The mechanisms through which the publication will be accessed by the relevant personnel at the Ministry is very limited considering the poor documentation system as well as limited internet access of most public service agencies.

The Institute has been conducting an Annual Review Meeting (ARM) since 2001 with the theme “Bridging the Research Policy Divide”. In these meetings, the Institute gets to present its research findings and that those of other health collaborators to a body of stakeholders including the Ministry officials and staff. There are gaps in the implementation of these meetings that could limit its potential for effective dissemination. For one, although the proceedings are recorded (and stored in CD-ROM) and reporters have been designated, there is no systematic documentation of critical discussions on public health issues, still less consensus on follow-up action especially between the Institute Ministry and NMIMR. It is also possible that the Ministry people may have limited understanding of the implications of the researches to their respective health service delivery function. NMIMR maintains that they eliminate the scientific language when they present the researches.

### **iii) Health Research Agenda and the Role of NMIMR**

A Research Agenda is generated by the Health Research Unit (HRU), a Unit of the GHS mandated to “provide vital information through research and guidance to assist policy formulation and programme implementation” (HRU-GHS, 2005). This Research Agenda is identified to facilitate the implementation of the Medium Term Health Plan (MTHP) of the (MTHP) Sector and the POW. It is contained in a 5-Year Research Programme of Work that is translated into annual rolling plan. Most of the researches pursued are funded from the Ghana-Dutch Research Collaboration Project (GDCCP).

For 2001 - 2005, the following research needs were identified:

- a. *Communication and Community Participation*: Health education approaches, beliefs and perceptions, community involvement in programmes;
- b. *Quality Care*: Staff attitude, referral system, assurance of technical skills, drugs and logistics management, monitoring and confronting anti-microbial resistance, herbal remedies;
- c. *Financing*: Management of the different sources of fund such as internally-generated funds, donor funds, private sector funds, pricing of drugs, exemptions; and,
- d. *Decentralization*: Integration of funding, National priority vs. local priority, resource allocation.

NMIMR participates in this research process as a stakeholder in the generation of the research agenda and as proponents to research proposals submitted to the Project for funding. It would seem clear from the range of research priorities that most of the fields of study are outside the mandate and expertise of NMIMR. In fact, HRU’s research orientation leans more towards development/operations research and public health researches, the types that HRU believes the sector needs. These “downstream” researches would then make use of findings of available research studies, including basic researches. Between 2001 and 2005, only 1 study on malaria vaccine was conducted by the Institute under the GDCCP. However, 3 NMIMR proposals have been approved in 2006.

The HRU has been organizing an Annual Research Dissemination Forum, for presentation and discussion of researches done within GHS, since 2004. NMIMR has presented 2 of its papers on malaria transmission and immunity during the second forum.

### **iv) Research Utilization Capacity of MOH and GHS**

Although the MOH and GHS have their respective health professionals, the inadequate resource support may render them less than capable to recognize the significance of research findings (e.g. that of NMIMR) as well as utilize them for decision-making. The inadequacy of health personnel, in terms of quantity and quality, in the public service are is well known. Technical support, in terms of mobility and compilation/review of reference materials, is also limited. One personnel of NMIMR professes that, although he submitted a study with critical findings on VHF diagnosis and prevalence to GHS, but nothing has ever come out of it.

The institutional (both intra and inter) relationships are also not well laid down. Responsibility for overall research coordination remains to be clarified and resolved between the MOH and GHS.

## 4.2 IMPACT: ACHIEVEMENT LEVEL OF HYPER AND SUPER GOAL

The change in the incidence and prevalence level of each disease which this Project is intended for varies from disease to disease. But because the diseases whose prevalence is being controlled are more than those whose prevalence is becoming higher, the super and hyper goals of this Project are possibly being achieved.

Among all the diseases addressed by the project, measles have been officially reported as having been controlled, particularly as no deaths have been experienced from the disease for the past 4 years.

A description of the status of the other diseases is described below.

### HIV/AIDS

Sentinel surveillance conducted annually by the National AIDS/STI Control Programme (NACP) among women attending antenatal clinics, indicated observed median HIV prevalence of 2.4% in 1994, 3.6% in 2003, 3.1% in 2004, and 2.7% in 2005. The 2003 Ghana Demographic and Health Survey (GDHS) using household sample put the result at 2.2. These rates put Ghana's experience in the category of generalised epidemic. Generalised epidemic, according to the UNAIDS/World Health Organization (WHO), is experienced by any nation with an adult HIV prevalence of 1 percent or higher in the general population. Nevertheless, there seems to be an improvement of the situation and, In fact, the 2005 HIV Sentinel Survey (HSS) Report concluded that the overall prevalence in Ghana may be reaching a stabilisation stage.

Despite this performance, some health institutions still rank AIDS as the "number one cause of death" in their facilities (NACP, 2006). In terms of absolute numbers, the situation can be disconcerting just on the basis of hundreds and thousands of reported cases and many more going un-reported for several reasons. Table 1 shows official statistics on HIV/AIDS.

**Table 1: Reported HIV/AIDS Cases, 1986 – 2005**

|  | 1986 to December 2003 | 1986 to December 2005 |
|--|-----------------------|-----------------------|
| Reported cases to MOH AND and GHS      | 76,139                | 104,996               |
| Estimated Actual Cumulative AIDS Cases | More than 200,000     | More than 200,000     |
| Current HIV infections                 | About 395,000         | About 247,220         |

Source: NACP Bulletin, September 2006

### SEXUALLY TRANSMITTED INFECTIONS

Testing for syphilis has been the most consistently observed among all STIs because syphilis is an important co-factor for HIV transmission. The HSS recorded a syphilis prevalence with a mean of 5.9% for 2005, a decrease from the mean of 6.6% in 2004. The prevalence of 2004 is the highest level of prevalence since the monitoring of syphilis under the HSS. The reasons are not so much of an upsurge of the infection but the use of a rapid test followed by a confirmation of reactive samples by Treponema Pallidum Haemagglutination Assay (TPHA).

### TUBERCULOSIS

The National Tuberculosis Program (NTP) of the MOH/GHS uses 2 indicators to assess performance in addressing the disease. These indicators and the national targets are as

follows:

- a) Case Detection Coverage - 65% of new infectious TB cases by 2006; and
- b) Cure Rate - Cure 70% of new infectious TB cases detected by 2005.

A gradual decline in Case Detection Coverage has been experienced from 32% in 2002, to 28% in 2005, and 22% at the end of the third quarter of 2006, but was expected to exceed 2005 coverage by the end of the year. Meanwhile, Cure Rate has been increasing from 55.1% in 2002, 61% in 2003, 63.6% in 2004, and 66.2% in 2005. However, deaths of TB patients are still at a level that alarms health workers. They attribute it to late reporting, thus, late diagnosis and treatment. There are also an increasing number of dually infected TB/HIV patients.

## MEASLES

The country has not experienced any deaths from measles for the past 4 years. Suspected measles cases have also gone down overtime as shown in Table 2, with only less than 300 cases for 2006.

**Table 2: Trend of Suspected Measles Cases in Ghana, 2001-2005**

| Year         | 2001   | 2002   | 2003  | 2004  | 2005 |
|--------------|--------|--------|-------|-------|------|
| No. of Cases | 13,476 | 12,296 | 1,993 | 1,186 | 487  |

Source: 2006 Half a Year Report, Public Health Division, GHS, 200

As of the first half of 2006 a total of 247 suspected cases of measles were reported with laboratory specimen as compared to 188 and 704 suspected cases for the same period in 2005 and 2004 respectively. The number laboratory confirmed was 60 (24.4%), 5 (3%) and 49 (7%) for 2006, 2005 and 2004 respectively. The high percentage of confirmed cases in 2006 was due to outbreaks of measles in Greater Accra and Northern regions.

## SCHISTOSOMIASIS

No comprehensive baseline survey has been done for schistosomiasis and the government programme to address the disease has been inactive since 2002. Nevertheless, reported cases from the Integrated Disease Surveillance and Response System (IDSR) for the half year (January-June) were 6,295 in 2004, 4,616 in 2005, and 4,229 in 2006. Earlier statistics indicated annual reported cases of 9,834 in 2002, 9,157 in 2003, and 12,725 in 2004.

## VIRAL HEMORRHAGIC FEVER (VHF)

VHF refers to "group of illnesses that are caused by several distinct families of viruses" (CDC website). The causal viruses that were subjects of research under the project included yellow fever, dengue fever, hepatitis B and C, Ebola virus, Marburg virus, Lassa fever virus, and Crimean-Congo hemorrhagic fever virus. From among these viruses, the public health sector is only actively monitoring yellow fever under the IDSR.

Fifty-six out of the 138 districts (46%) reported at least one suspected case of yellow fever in the first half of 2006 as compared to 38% in 2005 and 34% in 2004 for the same period. All blood specimens taken from these cases were negative for Yellow fever IgM except two cases one each from Wassu-Amenfi West and Juabeso districts which were positive. One confirmed case

of yellow fever constitutes an outbreak. An intensive investigation to find additional cases and mass vaccination normally follows any detection of cases.

#### **4.2.1 FACTORS CONTRIBUTING TO THE ACHIEVEMENT OF GOALS**

Based on interview findings and literature review, the country has gained relative success in addressing the critical problems in 3 of the selected infectious diseases, and NMIMR has definitely contributed to these achievements, considering the Institutes highly specialized role within the National Control Programmes that systematically brought about either control of disease prevalence (in the case of measles) or instituted strategies that improved the handling of disease control (in the case of HIV/AIDS and TB). These diseases are discussed individually in this section.

##### **HIV/AIDS**

The National AIDS/STI Control Programme (NACP) was established in 1987 around the time that the existence of the disease was confirmed and actually increasing in prevalence. In 2000, Ghana established the Ghana AIDS Commission (GAC) to step up the national response to assume a multi-sectoral approach and implemented along decentralized lines. Factors contributing to the decline in HIV/AIDS prevalence include:

- 1) Counseling, testing, prevention of mother to child transmission services were expanded from about 89 in 2003 to 169 in 82 districts in 2005;
- 2) Expansion of STI treatment services;
- 3) Improvement and expansion in the diagnosis, and management of HIV in line with the prevention programmes;
- 4) Stigma reduction, grassroots advocacy, and behaviour change activities; and
- 5) Activities by the private sector and civil society.

Continuing from the achievements of the project particularly in capacity improvement on HIV testing, NMIMR has been playing the following critical role for NACP and GAC, respectively:

- i. External Quality Assurance Testing Unit for the HIV/AIDS sentinel survey, confirm the positive or negative findings from field samples;
- ii. Member of the Technical Working Group on Highly Active Antiretroviral Therapy (HAART);
- iii. Member of the Expert Committee on Drug Resistance, specifically the Virology Unit of the Institute;
- iv. Training of laboratory personnel, both regional and in some districts, for the detection of CD4 counts in HIV patients;
- v. Provides access to the Institute's laboratories for use of GHS personnel;
- vi. Utilizing the Institute's laboratory expertise, conduct of relevant scientific and operational researches that would support evidence-based decision-making;
- vii. Assisted in establishing HIV/AIDS prevalence using household samples in the 2003 Ghana Demographic and Health Survey (GDHS); and
- viii. Conduct research on how many TB patients have HIV/AIDS.



## **TUBERCULOSIS**

The positive development in Treatment Outcomes under the National Tuberculosis Programme (NTP) has been attributed to:

- i. Intensified regional monitoring activities at all levels of programme implementation resulting in improved recording and the implementation of Private Public Mixed Directly Observed Therapy especially in the Accra and Kumasi metropolis;
- ii. Training of Regional and District level personnel on treatment packages;
- iii. Enhancement of Home visits to patients to pre-empt treatment regimen default, assisted by treatment supporters/volunteers; and
- iv. Quality diagnosis at TB laboratories throughout the country.

The project has established a TB reference laboratory in NMIMR and the usefulness of the said laboratory as well as the training given to NMIMR scientists have manifested in subsequent achievements of the following:

- i. Annual regional training on TB microscopy by NMIMR for laboratory personnel and Regional TB coordinators. The Regions have been charged to run training courses for District TB coordinators. By 2005, additional 213 laboratory personnel and coordinators have been trained;
- ii. Based on the Manual developed by NMIMR, a Quality Assurance (QA) system for TB microscopy has been extended to the private health sector with funding support from the Global Funds Against AIDS, TB, and Malaria. Four (4) courses in TB microscopy and QA have been conducted for private laboratory personnel and follow-up visits were also implemented to respond to problems.

## **MEASLES**

The relative success in measles control has been attributed by public health officials to the following factors:

- i. Change of control strategy from regular immunization of infants under the Expanded Immunization Programme (EPI), to mass vaccination for the under 5 years old in 2002, and mass vaccination of those children between 9 to 15 years old in 2006;
- ii. Effectiveness and availability of imported vaccines funded under the funding support of UNICEF, JICA, WHO, and the Government of Ghana (GOG); and
- iii. Continuing surveillance under the IDSR that assisted in the identification of appropriate policy and strategic response.

It is under the third factor of success that NMIMR played a critical role, specifically providing laboratory service support to confirm field diagnostic results on suspected measles cases.

### **4.2.2 FACTORS THAT PREVENTED OR LIMITED THE ACHIEVEMENT OF GOALS**

Discussion in this section focuses on the 3 other infectious diseases that did not attain the same level of achievement as HIV/AIDS, TB, and measles, and the reasons behind the under-achievement. Primary among these reasons is the fact that no significant programme funding support has been extended to these diseases. Other aspects are explored below.

## **SEXUALLY TRANSMITTED INFECTIONS**

Since the European Economic Community (EEC) HIV/STD Project in 1987, there has been no dedicated programme to address STI except under the NACP. The Programme is concerned about STI being a pre-cursor of HIV/AIDS, thus, the sentinel survey has included the monitoring of the infection and strategies are being implemented through the decentralized health care system. Two distinct interventions have been made to date:

- a. Refresher course given to service providers on treatment methods and education of people; and
- b. Introduction of the pre-packages treatment (PPT) containing 4 condoms, 1 leaflet, and a set of 2 drugs.

Several reasons were identified for the less favourable response to STI:

- i. The Global Fund grant provides that the GOG funds activities to address STI, within the NACP, but this has not been forthcoming;
- ii. Equipment for testing is more expensive; and
- iii. HIV/AIDS is viewed as more fashionable, while STI is viewed to be curable and no visible marks are seen on affected individuals

## **SCHISTOSOMIASIS**

As earlier stated, the National Programme for Schistosomiasis Control has been inactive since 2002. There was definitely the absence of a strong institutional and programmatic framework to address the disease, indicating lack of commitment from the GOG. Stakeholders believe that significantly affecting government inactivity are the lack of international support and the impression that the disease is difficult to control, and no immediately visible fatalities. Health organizations, naturally, are still worried over the effects of the parasite on the health and productivity especially of the growing children and increasingly, adults.

Meanwhile, there is an obvious need to look for a new and more effective drug, enhancement of education campaign, and treatment of water contact sites, among others to control the disease. Nevertheless, several developments in this area are viewed to change the course of the disease:

- i. A review of the national policy and development of a new strategy for addressing schistosomiasis is currently underway. NMIMR is participating in this review and design; and
- ii. The Neglected Tropical Diseases Project, collaboration between Quality Health Partners (QHP), UNICEF, MOH, USAID through the International Trachoma Initiative, shall include schistosomiasis alongside other diseases that have common means of spread, common drugs, and can use the same means of education and drug distribution. A draft proposal is currently being finalized.

The role of NMIMR is recognized significantly because of the activities of WACIPAC, the fore-runner of which is the Global Parasite Control Initiative (GPCI) component of the (1999-2003) project (1999-2003). The GPCI established NMIMR as the West African Centre for Parasite Control. The NMIMR-JICA WACIPAC Project, that officially started on 1st January 2004 and ends in December 2008, has the following tasks among others:

- a. Organize international and in-country trainings and workshops for policy makers, programme managers and frontline officers;
- b. Develop the guideline for school-based integrated parasite control programme through a model project site in Dangme East district, Ghana; and
- c. Build information network for parasite control among participating countries, Development Partners and other Centres.

Experiences in the baseline studies and intervention in the model project site at Dangme East District and the various research studies in schistosomiasis diagnosis and screening, makes NMIMR a valuable resource for the oncoming National Schistosomiasis Programme.

### **VIRAL HEMORRHAGIC FEVER**

VHF is one of the diseases that command relatively less attention from the MOH. It is not one of the diseases listed under the priorities of the Health Sector Program of Work, 2002-2006. One possible reason is although cases have been identified between Ivory Coast and Liberia, no such cases have been observed in Ghana. Thus, with no empirical evidence of existence, serious government attention may not be forthcoming. It is also not receiving the same international publicity as the other diseases.

Nevertheless, capacity for, particularly, detection and laboratory diagnosis has been developed in NMIMR through the project. However, in 2005, WHO reportedly sent sample for testing to the Virology Unit. The result was identification of syndrome of yellow fever although VHF was not ruled out. It seemed VHF has not have been tested directly. WHO, that is currently collaborating with centres in South Africa, Senegal, and Abidjan, believes NMIMR can be a potential centre for VHF diagnosis.

### **4.3 UNEXPECTED PROJECT IMPACT**

#### Impact of Training:

One of the goals of training non-staffs is to attract individuals into research careers. The various training activities have resulted in some of the trainees being employed by the Institute. Training in specialised disciplines has resulted in the establishment of collaborative research programmes with beneficiary organisations and trainees.

#### Others:

The improvement in NMIMR capacity for culture-based diagnosis and the ability to develop specific pathogen-free animal models presented the Institute as the preferred expertise by the GHS to confirm clinically diagnosed Buruli ulcer cases and study the etiology of the disease. The Animal Experimentation Unit now supplies animals for experimental work of other organizations, including medical students.

#### **4.4 SUSTAINABILITY OF PROJECT PURPOSE**

The project succeeded in achieving the Purpose to strengthen NMIMR's capacity for research and training on the selected diseases in collaboration with other stakeholders.

Since then, continuing investigations on the selected diseases have been conducted more actively for HIV/AIDS, TB, and schistosomiasis, but relatively less for STI and VHF. There was only 1 published research on measles. In the same vein, NMIMR researches on other priority diseases of the country, both traditional and emerging, have been pursued especially for malaria, diarrhoea, and buruli ulcer. The Institute's investigations in phytomedicine (or herbal medicine) have been stepped up alongside national interest in promoting herbal medicine to address diseases.

Transfer and dissemination of research expertise have been well-established in the Institute. The number of students, both undergraduate and post-graduate levels, who underwent research work/attachment with the Institute increased from 29 in 2003 to 108 in 2006. Although, specific data is not available, the number of GHS and non-GHS personnel to be trained by the Institute was also reportedly significant.

Collaboration with other stakeholders has grown in strength judging from the extent of NMIMR roles in the various GHS disease control programme, membership of Research Fellows in the various Boards/Committees created under the MOH and GHS, as well as the number of local and international collaborative research partners that reached 100 between 2004 and 2006.

The reputation of the Institute to be the prime bio-medical research in the country has become an invaluable asset.

The probability of sustaining the capacity of NMIMR to contribute effectively to disease control, thus promoting public health, seriously depends on several factors. Firstly, financial resources to support any Institute research agenda are inadequate. GOG only provides for personnel emolument, reflective of the inadequacy of commitment to research for development. If not for available funds from international disease control programmes, research levels on HIV/AIDS, TB and schistosomiasis may have been less high. Secondly, a national research policy that would dictate a national research agenda for the Institute to also base their priorities is lacking.

The above factors leave the Institute to its own organizational resources (i.e. personnel, physical and financial assets, and network) for survival. Although, there has been the presence of donor partners as well as international institutions funding special researches, this level of relationship has created donor dependency that, to some extent, limits the freedom of the Institute to address their real research priorities.

##### **4.4.1 RESEARCH AREAS, DISSEMINATION AND RESOURCES**

The Institute continued to conduct research on the selected diseases at varying levels. Between 2004-2006, there was only 1 published research for measles, TB, and STI, respectively, and none in VHF. Published research on HIV/AIDS was the highest most with a total of 10. Nevertheless, there have been more of the NMIMR research works on these diseases as proven by the number of presentations during the annual review meetings (ARM) in the same period. These are shown in Table 3. There is no unpublished research done on

measles during the period.

Research in other GOG priority diseases were also pursued during the period, including malaria, focus of a significant number of NMIMR researches, and non-communicable diseases. Table 3 also indicates increasing Institute interest in Buruli ulcer, phytomedicine (or herbal medicine), and diarrhoea. Not included in the Table would be data on nutrition and mortality research that continue to be pursued, especially under the IMMPACT Project. This health concern is also a GOG priority. Research on aflatoxins (toxic compounds produced by a specie of fungi that grow in certain food or feeds) is also becoming significant.

**Table 3: NMIMR Research on Selected Diseases, 2003-2006**

| DISEASES                  | 2003      | 2004      |     | 2005      |     | 2006      |     |
|---------------------------|-----------|-----------|-----|-----------|-----|-----------|-----|
|                           | Published | Published | ARM | Published | ARM | Published | ARM |
| HIV/AIDS                  | 5         | 5         | 5   | 3         | 2   | 2         | 6   |
| Tuberculosis              | 1         | 0         | 4   | 0         | 0   | 2         | 1   |
| Measles                   | 1         | 0         | 0   | 0         | 0   | 1         | 0   |
| STI                       | 1         | 1         | 1   | 0         | 1   | 0         | 1   |
| Schistosomiasis           | 3         | 6         | 3   | 1         | 1   | 2         | 2   |
| VHF/Viral Infections      | 0         | 0         | 3   | 0         | 2   | 0         | 1   |
| Malaria                   | 10        | 9         | 14  | 12        | 13  | 7         | 12  |
| Buruli                    | 0         | 3         | 1   | 6         | 1   | 4         | 2   |
| Phytomedicine             | 3         | 3         | 5   | 2         | 1   | 0         | 3   |
| Diarrhoea                 | 6         | 2         | 1   | 1         | 4   | 1         | 4   |
| Non-Communicable Diseases | 0         | 0         | 0   | 0         | 1   | 0         | 3   |

Source: NMIMR Library; ARM Abstracts, 2004-2006

From 2004 to 2006, a total of 110 researches by NMIMR staff have been published in 58 different publications in mostly health and medical fields. Although it has increased from 2003 (32 publications) to 2004 (50 publications), the number has been decreasing from 2005 (36) to 2006 (24). Despite the decline in publications of NMIMR researches, there have been increases in unpublished studies as indicated in the presentations during ARM. This may look positive in the light of more relevant public health researches being produced by the Institute.

Not all NMIMR researches get into publications. Many of them remain as monographs or project documents. There are also theses and dissertations of students that were supervised by Institute Research Fellows. A weekly expert presentation is organized to allow individual researcher/specialist to communicate their methods and findings. The Annual Review Meeting was discussed earlier and seems to be a very potential venue to discuss a practical link between NMIMR researches and public health policy/strategies if not for procedural gaps.

There is a general assessment within NMIMR as well as stakeholders in the health sector that the Institute needs more staff to implement its very important research role. Based on the Establishment List (for personnel), there is a gap of 74 personnel against the establishment requirement of 199. The gap seems to be among the Research Assistants and Laboratory Technicians across the various NMIMR Units. Although the number of Research Fellows seem to meet the requirements, in reality the load placed on the Fellows is something they could

hardly cope with. Nevertheless, researches are supported by the presence of students on attachment to the Institute.

As of end of 2005, 11 members of staff are pursuing programmes leading to Ph.D. and another 7 for their Masters degree. On record, there was 12 staff that went on leave for purposes of study as of September 2006.

### **Funding for Research**

Insufficient data was made available to assess the amount of research funds/grants utilized by the Institute. The Institute prepares an annual Medium Term Expenditure Framework (MTEF), in which they indicate their operational requirements consisting of Personnel Emoluments, Administrative Activities, Services, and Investments. Investments cover purchase and maintenance of assets by the Institute. Based on these categories, one can surmise that it is from the Services category that significant components of researches are budgeted. These figures approximate the total requirements of all the nine (9) Research Units in the same period.

Table 4 gives a summary of Institute's MTEF for the years 2005, 2006, and 2007 and as submitted to the University Administration and onward to the Ministry of Finance and Economic Planning (MFEP). The summary gives a fair indication of the magnitude of resources needed to operate the Institute and perform its mandate.

**Table 4: Projected Expenditure by Item, 2005 - 2007 (In Cedis)**

| ITEM                      | 2005           | 2006           | 2007           |
|---------------------------|----------------|----------------|----------------|
| Personnel Emoluments      | 7,290,881,750  | 10,633,228,119 | 13,779,077,989 |
| Administrative Activities | 5,551,888,636  | 5,564,319,600  | 5,671,813,557  |
| Service                   | 3,012,669,004  | 2,001,560,000  | 4,158,132,105  |
| Investment                | 7,652,295,000  | 7,437,198,000  | 4,837,809,200  |
| TOTAL                     | 23,507,734,390 | 25,636,305,719 | 28,446,832,851 |

Although, the Annual Budget is submitted to the government for review and consolidation into the budget, not all the 4 items are supported through government subvention. GOG funds mostly serve the Personnel Emolument requirements of the Institute. The limited allocation of GOG funding support to NMIMR might reflect the low priority given to research itself in the country. As an indication, within the GHS, the HRU was only able to negotiate that 5% of the Health Budget go to the research requirements of the Unit in 2006. Before this time, the Unit had to depend on external grants, apparently preventing them to conduct researches they identified as urgent for the sector.

As NMIMR is obliged to seek sources of revenue for other requirements externally (mainly to donors engaging NMIMR for certain researches), it is crucial for NMIMR to advocate their research findings through presentation or publication.

The need to maintain the Institute's operations have actually brought a task regimen among the personnel to generate as many proposals for funding as they could in order to obtain success in receiving research grants. In the recent years, it has been a practice to introduce a 15%

Institutional Charges against project costs to also augment administrative and investment requirements, including the maintenance of the laboratories and equipment. They use this revenue for the services and investment needs of the Institute.

For 2007, the submitted Projected Income figure included 3,000,000,000 cedis from the Ghana Education Trust Fund (GETFUND). The Institute generates its own income (IGF: Internally-generated fund) from certain services offered, but, this hardly covers more than 3% of their budget. Funds from this source are used to partially cover administrative and service activities.

A look at the number of collaborative research partners can also provide an indication of the number of research (and grants) that NMIMR have received during the period. The number of research partners under specific categories between 2004 -2005, was as follows:

|                            |   |  |
|----------------------------|---|--|
| Local Academia             | - | 16   |
| GHS                        | - | 11   |
| Disease Control Programme  | - | 3  |
| Local Research Centres     | - | 9  |
| Other Public Agencies      | - | 3  |
| NGOs/Private Sector        | - | 5  |
| African Institutions       | - | 9  |
| Western-Based Institutions | - | 37 (Including Naval Medical Research, Cairo) |
| Japan-Based Institutions   | - | 7  |

From among the partners, the most significant funding come from the Government of Ghana (GOG), JICA, DANIDA, WHO, National Institutes for Health (NIH), WHO Special Programme for Research and Training in Tropical Diseases (TDR), Family Health International (FHI), European Union, Ghana AIDS Commission, Initiative for Maternal Mortality Programme Assessment (IMMPACT) - University of Aberdeen, U S Navy Medical Research Centre, USAID, Multilateral Initiative on Malaria, Wellcome Trust, Department for International Development (DFID), Bill and Melinda Gates Foundation, African Development Bank, African Malaria Network Trust (AMANET), and Ghana Education Trust Fund.

When this evaluation study was conducted, NMIMR was concerned with at least 17 projects supported by various international organisations or other donors, besides WACIPAC supported by JICA, and there were some projects among them which tackle the same diseases, like HIV/AIDS and TB, as this project. Therefore, it is reasonable to conclude that NMIMR has been able to advocate their research findings enough to attract external organisations.

Yet, although NMIMR's research results have been widely spread, for lack of any legal link or institutional relationship between NMIMR and other health-concerned institutes/organizations in Ghana, each budget support tends to be a single act and NMIMR's financial situation is liable to be influenced by the concerns or interests of other stakeholders.

### **Research Equipment:**

The key facilities provided by JICA during the Infectious Diseases Project and thereafter were the

- a. Electron Microscopy;
- b. Biosafety Level 3 Laboratories;
- c. Animals Experimentation Facility;

- d. Conference Hall;
- e. Liquid Nitrogen Plant; and
- f. Administrative Block for WACIPAC Health Support Centre.

The rest of the equipment possessed by the Institute includes the following:

- a. General Laboratories;
- b. Clinical Research Facility;
- c. Electron Microscope;
- d. Mercury Analyzer;
- e. Staff Canteen;
- f. Sample Collection & Storage Facility; and
- g. Research project office building.

A genetic analyzer and a sequencer for resistance monitoring were added to the assets of the Institute under the National Aids Control Programme (NACP).

Health stakeholders still assess the laboratories and equipment of the Institute as functional, and to some excellent. Indeed, maintenance of the laboratories and equipment is a priority of management. However, the limited resources available on a yearly basis render the policy very difficult to implement. The long-running electricity crisis in Ghana also serves to contribute to faster depreciation of facilities. The highly sophisticated laboratories including the animal facility and P3 laboratory have their own generator units. The generator that serves the whole Institute is currently working inefficiently and ineffectively. The Institute copes through consistent generation of the 15% institutional charges against projects.

Finally, in order to ensure institutional sustainability, the Institute has to continue to build its capacity to mobilize research funds that would reduce their dependence on donors especially those who only promote their own agenda not consistent with local priorities. Strategies to maintain trained and experienced personnel are of utmost importance in order to maintain the Institute's strong role in the health sector.

#### **4.4.2 TRAINING ACTIVITIES**

The Institute has continued on to provide training for the following sorts of people:

- a. Post graduate students in medical research;
- b. Undergraduates; and
- c. Public health personnel.

Training on project specific/disease-related subject areas has involved laboratory diagnosis in HIV diagnosis, tuberculosis, buruli ulcer, malaria, filariasis etc. HIV/AIDS training in prevention of mother to child transmission of HIV using antiretroviral as well as training of counselors for HIV/AIDS prevention and care have also been organized.

Students Training involves:

- a. Students undertaking undergraduate (Bachelors degree) or postgraduate degree programs i.e. Masters and Doctoral levels whose projects are based on an ongoing funded project or the supervisor and student identify and area of research for which the institute



has the expertise and/or facilities to support such a research. This program takes between 1 and 3 years to complete;

- b. Training or mentoring of students through attachment to various Units/projects during vacation periods. Table 5 shows the total number of students benefiting from NMIMR training from 2000-2006

**Table 5: Students Trained at the NMIMR, 2000 – 2006**

| Student Activity                            | 2000-01 | 2002 | 2003 | 2004 | 2005 | 2006 | Total |
|---|---------|------|------|------|------|------|-------|
| Short-term Attachment                       | -       | -    | 16   | 31   | 51   | 54   | 152   |
| HND Project Research                        | -       | -    | 1    | 4    | 3    | 25   | 33    |
| B. SC.                                      | -       | 5    | 10   | -    | 17   | 19   | 51    |
| M. P hil.                                   | 4       | 2    | 2    | 5    | 11   | 10   | 34    |
| Ph. D.                                      | 2       | -    | -    | -    | 3    | -    | 5     |
| CHS Mentorship<br>(Medical/Dental Students) | -       | -    | -    | 3    | 12   | -    | 15    |
| Total                                       | 6       | 7    | 29   | 43   | 97   | 108  | 290   |

Source: NMIMR Administration, February, 2007

Generally, the Institute has witnessed an increase in request or interest in training. The numbers of applications/enquiries for students' training/mentorship continue to increase over the years. This area has seen an average increase of about 50% annually between 2004 and 2006.

#### **Adequacy of Personnel:**

Twenty-eight 28 senior members of the Institute serve in the pool of lecturers to undergraduate and postgraduate students in the Faculty of Science and the College of Health Sciences of the University of Ghana, as well as trainers for the various training programmes offered within the Institute. This pool of lecturers/trainers is made up of 4 Professors, 8 Associate Professors, 5 Senior Research Fellows, and 11 Research Fellows.

Whilst the current number of personnel is able to support the requisite training in infectious diseases, the expansion of scope in research to cover new diseases demands a corresponding increase in personnel to sustain the training components. To this effect, a staff development strategy has been put in place to ensure that young scientists are recruited and adequately trained to take up the challenge.

## 4.5 ENHANCEMENT OF PROJECT GOALS

HIV/AIDS and TB are the only diseases relevant to the project that were identified under GOG priorities under the 2002-2006 POW. As mentioned above major strides have been achieved by the respective programmes addressing these 2 diseases. There remain significant challenges that GHS officials believe requires a multi-sectoral commitment.

### For HIV/AIDS:

- i. Many more of the cases go unreported (hidden epidemic) especially because lack of awareness, lack access to health care services, stigma attached to the disease,
- ii. many people with AIDS die of opportunistic infections before they can be diagnosed with AIDS, private laboratories do not report all their statistics, etc.;
- iii. Current drug used for treatment (ART) is still beyond the reach of many patients;
- iv. Professional care is inadequate, both in quantity and quality; and
- v. More funds are needed to implement an accelerated programme.

Based on the 2005 HSS results adjusted with the 2003 GDHS HIV prevalence, key estimates have been derived using an Estimation and Projection Package (EPP) for generalized epidemics. The projection tool estimated the 283,733 Ghanaian adults living with HIV at the end of 2010. Thus, even though there is an overall stabilizing of prevalence, it should still be a serious concern that there are still areas of high prevalence (e.g. beyond 6% for Agomanya and Koforidua in the Eastern Region.)

### For TB:

There are still challenges to ensuring that people report TB cases for proper treatment. In any case, to be able to maintain success in treatment among those detected, some components of the programme have to be improved on. These include:

- a. Support to patient care;
- b. Better way of distributing drugs; and
- c. Measures to ensure adherence to treatment regimen.

The rest of the selected diseases are low in the priority of the GOG and may take some time for a comprehensive programme to be laid down. Also, other diseases are coming up, seemingly more urgent, thus the MOH- and GHS has to allocate resources for them. This includes Avian Flu, Severe Acute Respiratory Syndrome (SARS), Buruli Ulcer, etc.

The role of NMIMR within the efforts of the MOH- and GHS to address the critical diseases will remain crucial, considering that the Institute has the singular expertise in specialized laboratory diagnosis, possessing the equipment, the technique, and the professional scientists.

## **4.6 RELEVANCE OF PROJECT TO NMIMR'S ROLE**

NMIMR, from the point of view of the local health stakeholders as well as from overseas, is the leading biomedical research institute in Ghana. Some high ranking officials would like to call them the “pinnacle of medical and health research in the country”

Practically, the Institute is the highest reference point as far as laboratory confirmation of test findings from other laboratories especially within the GHS. The Public Health Reference Laboratory (PHRL) has limited laboratory capacity and seems to have focussed on tests related to HIV/AIDs. The Institute provides capacity building to all the GHS laboratories or reference centres including the PHRL, Kintampo Health Research Centre (KHRC) Dodowa Health Research Centre (DHRC), Onchocerciasis Chemotherapy Centre, Hohoe and the Navrongo Health Research Centre (NHRC).

The need to build the capacity of NMIMR in research and training still exists if one considers the needs of the country in promoting public health. The reasons are highly based on the level of specialization and expertise that the Institute has reached as well as developments in health locally and globally. Below are capacity-building areas that may be relevant to pursue within a collaborative project framework.

### **a. Emergence of New Diseases**

New diseases are cropping up (e.g. SARS, Avian Flu, Buruli Ulcer), the causes of which are presently unknown, and laboratories have limited capacity to firstly diagnose their existence. The skills and technology required to address these new diseases also keep on changing, thus, it demands that scientists acquire the ability to track changes in state of the art (medical) research technologies and techniques. Furthermore, evidence-based research is required to conduct appropriate targeting of interventions.

### **b. Product Development**

NMIMR is the most likely candidate to move local medical research into product development such as vaccines to address critical diseases. The current situation does not augur well for adding this area to NMIMR's mandate because of a legal framework that puts administrative pressure on scientists. Collaboration with the GOG may accelerate the process.

### **c. Need for More Applied, Operational, and Public Health Researches**

Experts in NMIMR feel it is about time to move on from basic research into more applied researches such as in the field of molecular research, bio-informatics, genomics, and use of computers for drug design. The use of powerful tools such as Geographic Information System (GIS) is yet to be used to track sources of infection.

Operational researches that supports the findings of biomedical research have to be given attention within the Institute. Capacity to undertake such studies will require stronger familiarity with the social sciences and the Institute may have to add this to their range of expertise.

## **Relationship with JICA**

The relevance of any project intervention especially when the nature of the intervention deals with institutional capacity building, has to take into consideration the relationship between the project resource recipient/beneficiary and the project resource donor. Ideally, during and at the end of any capacity-building project, the institutional beneficiary should be able to feel a sense of ownership both of the project processes and whatever capacity gained. Owning the project process from the initial stages would make the recipient feel their sense of independence and allow them to freely plan and manage based on how they assess the project environment. This would also ensure that the lessons of implementation, both success and failure, will also contribute to the strengthening of management capacities.

The project terminal evaluation cited that the manner by which Japanese Technical Cooperation was set-up no longer was consistent to the status of NMIMR as an autonomous Ghanaian medical research facility, collaborating with as many local and international organizations in medical-related researches. The evaluation surmised that the basic premise of the then technical cooperation, that is, “the local counterpart needs to learn technology and techniques from Japan”, should give way to equal research collaboration with NMIMR.

NMIMR management, and in fact even some stakeholders from GHS, believes that the practice of parallel administration for NMIMR and JICA projects also present efficiency problems for NMIMR and affects the effectiveness of project implementation. The continuation of such practice with the WACIPAC project engenders indifference from NMIMR management.

## **5. CONCLUSIONS**

The impact of the Project on the identified super and hyper goals is high as far as measles has been controlled and the diagnostic capacity of NMIMR contributed to this achievement. On the other hand, the impact on the targets for HIV/AIDS and TB is only relatively high considering that positive developments in detection and treatment strategies are viewed to potentially control the diseases. NMIMR played a significant role within the national disease control programmes that produced these positive developments. For the rest of the diseases, namely STI, VHF, and schistosomiasis, the impact is medium. Reasons for the limited achievements on the latter have been earlier expounded.

The impact of the Project on the overall goal is medium. The smooth adoption of NMIMR research recommendations by the MOH and GHS was facilitated by the availability of disease control programme funds, largely from the Global Fund Initiative for HIV/AIDS, TB, and Malaria. It is obvious here that, the concern is largely systemic in that the nation is highly dependent on donor funds in addressing public health problems.

The probability that NMIMR could sustain the purpose and outputs of the Project is medium. The Institute has so far maintained the expertise in research and training that has been developed/strengthened under the Project, but, the ability to manage funds mobilization is currently inadequate. These funds are critical for the Institute to respond to the continuing needs for research (on both traditional and emerging diseases), strengthening the number of

qualified researchers, standard maintenance of laboratories and equipment, among others.

Nevertheless, NMIMR has grown in strength since the time of the terminal evaluation, more importantly establishing functional relationship with MOH and GHS. The Institute now faces some challenges, at the same time prospects, that can be addressed in partnership with other stakeholders.

The following were the significant findings:

- a. Among all the diseases addressed by the project, measles have been officially reported as having been controlled. The national programmes on HIV/AIDS and TB have realized positive developments in controlling the disease, with research and laboratory support from NMIMR;
- b. STI, schistosomiasis, and VHF were not provided similar control inputs, including surveillance and diagnostic interventions, especially because no significant external funding has been made available for them, and evidence of the existence of VHF in Ghana is still to be generated by scientists;
- c. NMIMR has established a role within MOH and GHS specifically in areas of quality assurance testing, vaccine/drugs efficacy testing, confirmation of safety and efficacy of traditional medicine, training of laboratory personnel, prevalence, etymological and transmission studies of diseases, etc.;
- d. Recommendations from NMIMR research and laboratory investigations were built in to MOH and GHS decision-making specifically in the cases of National Control Programmes that gave specific assignments to the Institute and has representatives in their respective Board;
- e. Recommendations from NMIMR-initiated studies may not be the sole consideration in MOH and GHS policy-making or strategy identification. Other factors have to be considered including, awareness of NMIMR research findings, understanding the science behind certain health research issue, cost of introducing an intervention, and manner and cost of packaging the intervention. Also, the lack of legal institutional linkage between MOH and GHS, renders research-policy link difficult;
- f. Annual Review Meetings both by NMIMR and the HRU-GHS raise valuable information on research findings and recommendations, but, the lack of mechanism for consensus-building and follow-up limit the effectiveness of the meetings;
- g. HRU-GHS research agenda opens limited possibility for scientific researches that is the mandate of NMIMR. GHS funds for more biomedical researches are also limited;
- h. The Project Purpose includes the phrase of “in collaboration with other public health institutions” and the statement of “Major stakeholders remains committed to the Project” is among the importation assumption. Yet NMIMR does not have any legal or structural linkage with other public health institutions. Stakeholders should, therefore, have considered and contrive substantial and concrete measures to realize the collaboration during the planning stage. Provided that some activities and outputs had been incorporated into the contents of this Project in advance, each stakeholder would have deliberated this point more consciously, so that the achievement level of the overall goal could have been enhanced.
- i. NMIMR sees the need for more public health relevant researches, but they are constrained by personnel capacity, including those who can effectively conduct research that requires

study of the sociological factors surrounding disease control. More importantly, NMIMR Research Fellows are compelled to produce scientific papers for publication in order to move up in the University professional hierarchy. Some research grants are also inclined towards scientific researches;

- j. NMIMR publications and research studies in the past 4 years have largely tackled HIV/AIDS, TB, schistosomiasis, malaria, Buruli ulcer, phytomedicine, and diarrhoea. Continuing researches were also done for nutrition and child/maternal mortality and aflatoxins;
- k. Limited funds for research and facility operations compel NMIMR to bid for as many research grants as possible. Fifteen percent (15%) of research grants are allocated to funding operations. These monies have been complementing a limited GOG budget and a very small amount of IGF. The situation does not fully allow NMIMR to engage in researches identified as more relevant for public health and makes them dependent on donors;
- l. The Institute has become a very important and well-equipped training ground for student medical researches and health personnel;
- m. A Project to further strengthen NMIMR capacity will be very relevant because the Institute is in the best position to help investigate emerging diseases, engage in product development, there is a need to go into applied and operational researches, and institutional sustainability still needs to be addressed; and
- n. NMIMR-JICA relationship has to take on the nature of equal research collaborators.

## **6. RECOMMENDATIONS**

The aforementioned findings from the evaluation hint at some action-oriented recommendations that NMIMR, JICA, MOH and GHS can consider following through. To wit:

- a. The Annual Review Meeting of NMIMR and Annual Research Dissemination Forum of the HRU should incorporate mechanism for consensus-building on policy implications and research requirements, as well as follow-up steps to ensure continuity of decision-making;
- b. More ideally, legally framed institutional linkage between NMIMR and MOH and GHS would be needed in order to establish a public health research agenda that balances scientific research and operational research. The purpose is to also effectively coordinate the research outcomes that may affect policy/strategy and communicate research requirements;
- c. NMIMR should prepare and make always available the documents which summarize concisely their past research achievements and contributions to the nation's health policy so as to be able to represent clearly its own activities and significance publicly.
- d. NMIMR should review the option to improve the management of IGF. Current charges for the use of facilities and acquisition of supply (e.g. animal models) are at subsidized levels. The institutional research status of NMIMR, both locally and internationally, commands service rates that would cover actual cost of production and maintenance. After all, NMIMR serves MOH and GHS in various capacities without charging any fees.

- e. Areas of capacity building for the NMIMR have been identified and can serve as a guide to any future planning by the Institute, as well as for donors who may wish to support the role of NMIMR in the health sector.
- f. Government policies on research agenda formulation, research funding, and coordination needs rational review and multi-sectoral deliberation. The laying down of such policies could prospectively address the sustainability concern of producing critical researches that are useful and actually applied to public health service delivery.
- g. Both NMIMR and JICA should consider the principles of equal partnership for any future collaboration. Both NMIMR and JICA should consider the principles of equal partnership for any future collaboration. After its establishment, Japan continuously supported NMIMR through a technology- transfer type of cooperation, so that NMIMR developed its own capabilities to be able to conduct researches independently. This Project, therefore, focused on the direct contribution of NMIMR to public health issues. There is, however, an impression that the project was implemented without clearing off the former style, a technology transfer type of cooperation. Now the personnel of both NMIMR and JICA should intend more deliberately to be premised on mutual trust, transparency, and accountability, to think of the ownership of NMIMR, and to respond to the priorities of NMIMR in the implementation of their mandate to support the aims of government to promote public health. Administrative systems should be also reviewed and enhanced, if necessary, in order to ensure that these principles are upheld.

## **7. LESSONS LEARNED**

- a. In case of a research/academic technical cooperation project/programme, an organization which conduct researches/academic studies and one which makes policies or applies research/study findings practically may often be situated separately. Therefore the legal relationship among stakeholders and fund flows should be considered and analyzed fully during planning stages. Significant assumptions should be also set on the bases of such consideration and analysis.
- b. The project planning stage should incorporate formal agreements between JICA and counterparts on the implementation of various levels of evaluation relating to the project. Roles, responsibilities, information required, and timing should form part of the agreement. JICA can also review the approach used by other donors wherein evaluation is one of the major outputs listed in the PDM. In this manner it becomes integrated in the overall planning and targeting.
- c. JICA should also enhance cooperation and sharing of information with other donors that conduct projects/programmes with the same local counterparts in order to make evaluation more efficient and effective.

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