

## ANNEX 1: PDM

Project Design Matrix for Terminal Evaluation (PDM E)  
 The Infectious Disease Project at NMIMR in Ghana  
 Duration: From 1 January 1999 TO 31 December 2003,  
 Target Group: NMIMR/Ghanaian

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<b>Hyper Goal:</b> - The selected infectious diseases in Ghana are controlled.	- The selected infectious disease-related morbidity in Ghana has decreased. - The selected infectious disease-related mortality in Ghana has decreased. - Increased productivity due to decreased absenteeism from work.	- MOH annual report - MOH annual report - Statistical survey	
<b>Super Goal:</b> - Incidence and/or prevalence of the selected infectious disease in Ghana are reduced. (Control of the selected infectious diseases in Ghana is improved.)	- Incidence and/or prevalence of the selected infectious diseases in Ghana reduced by 20%	- Health statistics	- No major epidemic occur
<b>Overall Goal:</b> - Recommendations from infectious diseases project has been adopted for implementation by 2004	- Number of recommendations adopted by MOH has increased for implementation by 2004	- Number of references for NMIMR in MOH action plan	- Improve basic needs (e.g. water supply, sanitation) - Health education improved - Positive behavioural change among inhabitants
<b>Project Purpose:</b> - Relevant research and training capability of NMIMR in collaboration with other public health institutions is strengthened.	[Research capacity] - More publications - NMIMR attract more funding for research [Training capacity] - More varieties of training courses - All planned training and follow-up courses mounted timely. - Quality of training given at NMIMR [Collaboration] - Increase in number of collaborated works between NMIMR and other health institutions and communities	- Publication in Medical Journal - Annual Report of NMIMR  - Training Report - Training Report - Subject content of training materials and diagnosis in trainee's lab.  - Annual Report of NMIMR	- Major stakeholders remains committed to the Project

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<b>Outputs:</b> 1. Molecular epidemiology of HIV/AIDS in Ghana is delineated.	<ul style="list-style-type: none"> <li>- Number of papers on HIV/AIDS published internationally</li> <li>- Number of HIV subtypes in Ghana identified</li> <li>- Number of diagnosed samples on HIV/AIDS</li> <li>- Number of isolated and characterized HIV</li> <li>- Number of HIV samples tested for quality control</li> <li>- Number of HIV strains tested for drug resistance</li> </ul>	<ul style="list-style-type: none"> <li>- Peer-reviewed journals</li> <li>- Peer-reviewed journals</li> <li>- Diagnosis record at NMIMR</li> <li>- Peer reviewed journals</li> <li>- Peer reviewed journals</li> <li>- Peer reviewed journals</li> </ul>	<ul style="list-style-type: none"> <li>- Surveillance by the Ministry of Health is functioning effectively</li> <li>- Major stakeholders positively participate in activities at NMIMR.</li> </ul>
2. Epidemiology and etiology of STDs in Ghana are delineated.	<ul style="list-style-type: none"> <li>- Trained staff detect STD microbes</li> <li>- Number of isolates of bacteria and chlamydia</li> <li>- Guideline for symptomatic treatment by 2003</li> </ul>	<ul style="list-style-type: none"> <li>- Laboratory records</li> <li>- Laboratory records</li> <li>- Peer-reviewed journals</li> </ul>	
3. TB reference and research lab. in Ghana is established.	<ul style="list-style-type: none"> <li>- BSL 3 Lab established in 1999</li> <li>- Trained staff can do smear test and quality control</li> <li>- Trained staff conduct culture and sensitivity test</li> </ul>	<ul style="list-style-type: none"> <li>- Laboratory records</li> <li>- Laboratory records</li> <li>- Peer-reviewed journals</li> </ul>	
4. Epidemiology and pathogenesis of the selected vaccine preventable diseases and the other/selected infectious diseases in Ghana are delineated.	<p>[VHF]</p> <ul style="list-style-type: none"> <li>- VHF antibody test performed for suspected cases</li> <li>- Technology for virus pathogen identification in mosquitoes is transferred to trained staff</li> <li>- GIS development for surveillance</li> </ul> <p>[Measles Apoptosis]</p> <ul style="list-style-type: none"> <li>- The immunological deficiencies induced by measles virus are identified</li> <li>- The basis of measles virus-induced immuno- suppression is explained</li> </ul> <p>[Measles surveillance study]</p> <ul style="list-style-type: none"> <li>- Establish surveillance system in the study area</li> <li>- Childhood mortality rate in the study area</li> <li>- Measles specific mortality rate in the study area</li> <li>- The incidence of measles in the study area</li> <li>- Zero-conversion rate during the Measles National Immunization Day is determined</li> <li>- Subtype of measles virus in Ghana is determined</li> </ul> <p>[Schistosomiasis]</p> <ul style="list-style-type: none"> <li>- Potential vaccine candidate(s) is/are developed</li> </ul>	<ul style="list-style-type: none"> <li>- Study report/survey report</li> <li>- Study report/survey report</li> <li>- Study report/survey report</li> <li>- Study report/Peer-reviewed journals</li> <li>- Study report/Peer-reviewed journals</li> <li>- Study report</li> <li>- Study report</li> <li>- Study report</li> <li>- Study report</li> <li>- Laboratory records/Peer-reviewed journals</li> <li>- Laboratory records/Peer-reviewed journals</li> <li>- Peer-reviewed journals</li> </ul>	
5. Bio-safety control system is established.	<ul style="list-style-type: none"> <li>- Preparation of bio-safety level 3 facility guidelines</li> <li>- Bio-safety manual</li> <li>- Number of accidents</li> <li>- Number of meetings of bio-safety committee</li> </ul>	<ul style="list-style-type: none"> <li>- Bio-safety maintenance record</li> <li>- Bio-safety maintenance record</li> <li>- Bio-safety accident record</li> <li>- Minutes of bio-safety committee meetings</li> </ul>	
6. Resources in infectious diseases research and control are developed.	<p>[Laboratory Animal]</p> <ul style="list-style-type: none"> <li>- Conform to SPF status specification</li> <li>- Conform to specific genetic profile of strain</li> <li>- Establishment and characterization of glasscutter colonies</li> </ul>	<ul style="list-style-type: none"> <li>- Microbiologic monitoring data</li> <li>- Genetic monitoring data</li> <li>- Study report/Peer-reviewed journals</li> </ul>	

	[Training] - Number of middle level staff trained - Number of middle level Lab. Technicians trained	- Teaching materials and staff - Records of trainees enrolled each year
7. Global Parasite Control Initiative is implemented at NMIMR	- Number of "Third Country Training" conducted - Establishment of GPCI secretariat - Development of curriculum for "frontier worker" training - Implementation of model project in the study area	- Records of the training - Organization chart at NMIMR - Training manual - Pilot project proposal

<p>Activities:</p> <p>1-1 Conduct research on the molecular and antigenic characterization of HIV strains in Ghana</p> <p>1-2 Conduct quality control activity for HIV labs in Ghana</p> <p>2-1 Conduct research study on sexually transmitted diseases and female reproductive health in Ghana</p> <p>3-1 Characterize mycobacterial agents of tuberculosis and their antimicrobial sensitivity patterns in Ghana</p> <p>4-1 Conduct research on VHF serology and molecular epidemiology</p> <p>4-2 Conduct research on immune dysfunction and apoptosis in measles infection</p> <p>4-3 Establish measles case based surveillance and research on molecular epidemiology</p> <p>4-4 Conduct research on potential vaccine candidate antigens for protection against schistosomiasis in Ghana</p> <p>5-1 Establishment and management of the bio-safety system</p> <p>6-1 Establish and characterize rodent colonies for research</p> <p>6-2 Conduct training of health personnel at NMIMR</p> <p>7-1 Conduct "Third Country Training" for Global Parasite Control Initiative</p> <p>7-2 Establish "West African Centre for International Parasite Control" at NMIMR</p>	<p>Input (Japanese side)</p> <p>1. Dispatch of experts (Long term and/or short term)</p> <ul style="list-style-type: none"> <li>- Chief advisor (56M/M)</li> <li>- Coordinator (60M/M)</li> <li>- HIV/AIDS (37.3M/M)</li> <li>- STD (1.8M/M)</li> <li>- TB (27M/M)</li> <li>- Parasitology (29.6M/M)</li> <li>- Molecular Biology (24M/M)</li> <li>- Bio-safety (1M/M)</li> <li>- Laboratory Animal (2M/M)</li> <li>- Global Parasite Control Initiative (18.9M/M)</li> <li>- Measles Surveillance (14.5M/M)</li> <li>- Project Cycle Management (0.5M/M)</li> </ul> <p>2. Counterpart training (Number of trainees)</p> <ul style="list-style-type: none"> <li>- Virology (3)</li> <li>- STD (3)</li> <li>- Bacteriology (2)</li> <li>- Laboratory Animal (2)</li> <li>- TB (1)</li> <li>- Parasitology (1)</li> <li>- Immunology (1)</li> <li>- BSL3 Laboratory Management (1)</li> <li>- Reference Laboratory Management (1)</li> <li>- Infectious Diseases Control Administration (1)</li> <li>- Administration of Research Institute (1)</li> </ul> <p>3. Provision of machinery and equipment</p> <ul style="list-style-type: none"> <li>- 123,700,000 JPY</li> </ul> <p>4. Cost sharing for local</p>	<p>Input (Ghanaian side)</p> <p>1. Assignment of counterparts and administrative personnel</p> <ul style="list-style-type: none"> <li>- The director of NMIMR</li> <li>- The director of Medical Service, MOH</li> <li>- Counterpart personnel in immunology, virology, bacteriology, parasitology, bio-safety, laboratory animals and other related fields mutually agreed upon as necessary</li> <li>- Administrative personnel</li> </ul> <p>2. Arrangement of land, building and facilities</p> <p>3. Sharing of expenses for project implementation</p>	<ul style="list-style-type: none"> <li>- Availability of subjects and sites</li> <li>- Timely arrival of equipment</li> <li>- Ethical clearance</li> <li>- Availability of staff</li> <li>- Excellent security is available</li> <li>- Trained personnel stay at post</li> </ul> <p><b>Pre-conditions:</b></p> <ul style="list-style-type: none"> <li>- All stakeholders will cooperate</li> <li>- Availability of appropriate/willingness of subjects</li> <li>- Candidates for training are available</li> <li>- Essential equipment is available</li> <li>- Expertise and technical support in certain fields of study available</li> <li>- Ethical clearance</li> </ul>
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## ANNEX 2: EVALUATION GRID

Collated by Marian Tadeffa-Kubabom, 13 February 2007

EVALUATION	EVALUATION QUESTIONS		STANDARDS OF ACHIEVEMENT	SOURCE OF DATA	RESEARCH METHOD
CRITERIA	MAJOR QUESTIONS	SPECIFIC QUESTIONS	NECESSARY INFORMATION FOR ASSESSMENT		
<b>Impact</b>	1. To what extent has the project hyper goal been achieved	1.1 Have Ghana's control over the selected infectious diseases (i.e. HIV/AIDs, STD, TB, VHF, Measles, parasite-related malaria, schistosomiasis) been achieved or improved?	1.1.1 Decrease in selected infectious diseases-related morbidity in Ghana from 2003 to 2006 1.1.2 Decrease in selected infectious diseases-related mortality in Ghana from 2003 to 2006	- MOH and GHS annual report - Demographic Health Survey - Infectious-diseases related studies, MOH/GHS - MOH/GHS Policy-Makers	Literature review One-on-one interviews
	2. To what extent has the project super goal been achieved?	2.1 Have the Incidence and prevalence of the selected infectious diseases in Ghana been reduced?	2.1.1 The reduction by 20% of Incidence and/or prevalence of the selected infectious diseases in Ghana from 2003 to 2006	- MOH annual report - Demographic Health Survey - Infectious-diseases related studies, MOH/GHS - MOH/GHS Policy-Makers	Literature review One-on-one interviews
	3. What were the factors that contributed to the achievement or under-achievement of the hyper and super goals?	3.1 If the selected infectious diseases in Ghana have been controlled, have there been any methodological/practical changes in the control?  3.2 If positive changes have occurred concerning the super and hyper goals, have the changes been brought about by the project?  3.3 Are there any factors that influenced the achievement of the super and hyper goals, other than the Project?  3.4 If the positive changes did not occur, what are the factors that inhibited their achievement	3.1.1 Control Methods utilized for the selected infectious diseases, 2003 to 2006  3.2.1 Basis for successful control methods and explanation for utilization of methods  3.3.1 Basis for successful control methods and explanation for utilization of methods  3.3.2 Assessed constrains and gaps in control methods used for infectious diseases	- MOH annual report - Demographic Health Survey - NMIMR staff trained on each selected infectious disease - MOH/GHS staff in charge of the selected infectious disease control - Infectious-diseases related studies, MOH/GHS	- Literature Review  - One-on-one interviews

**Impact**

<p>Since the terminal evaluation, 4. To what extent has the project overall goal been achieved</p>	<p>4.1 Have the recommendations on infectious diseases made by NMIMR adopted by MOH/GHS for implementation since the time of the terminal evaluation?</p> <p>4.2 Have the recommendations on infectious diseases made by NMIMR adopted by any other stakeholder(s) for implementation since the time of the terminal evaluation?</p> <p>4.3 What positive/negative factors have worked against the adoption of the recommendations on infectious diseases made by NMIMR?</p> <p>4.4 Have there been any changes in the quality of recommendations?</p>	<p>4.1.1 Increase in the number of recommendations made by NMIMR in 2004-2007 and adopted by MOH</p> <p>4.1.2 Number of service delivery methods utilized by GHS that have been influenced by NMIMR recommendations</p> <p>4.2.1 Number of stakeholder organizations that adopted NMIMR recommendations on infectious diseases</p> <p>4.3.1 Reasons for adoption or non-adoption of NMIMR recommendations on infectious diseases</p> <p>4.3.1 Assessment of NMIMR recommendations overtime</p>	<ul style="list-style-type: none"> <li>- MOH annual report</li> <li>- MOH/GHS Action Plan</li> <li>- NMIMR staff trained on each selected infectious disease</li> <li>- MOH/GHS staff in charge of the selected infectious disease control</li> <li>- Infectious-diseases related studies, MOH/GHS</li> <li>- Public Health Reference Laboratory (PHRL)</li> <li>- Development Partners (UNICEF, WHO, DANIDA, DfID, USAID, etc)</li> <li>- MOH/GHS Policy-Makers</li> </ul> <ul style="list-style-type: none"> <li>- MOH/GHS staff in charge of the selected infectious disease control</li> <li>- Infectious-diseases related studies, MOH/GHS</li> <li>- PHRL</li> </ul>	<ul style="list-style-type: none"> <li>- Literature review</li> <li>- One-on-one interviews</li> </ul> <ul style="list-style-type: none"> <li>- Literature review</li> <li>- One-on-one interviews</li> </ul>
<p>5. What were the factors that contributed to the achievement or under-achievement of the overall goal?</p>	<p>5.1 What were the factors that influenced the achievement of the overall goal?</p> <p>5.2 If the expected positive changes did not occur, what were the factors that inhibited their achievement?</p>	<p>5.1.1 Basis for adoption of NMIMR recommendations by MOH/GHS (including a comparison with similar initiatives on infectious disease control, if any)</p> <p>5.2.1 Assessed constraints and gaps in control methods used for infectious diseases</p>	<ul style="list-style-type: none"> <li>- NMIMR staff trained on each selected infectious disease</li> <li>- MOH/GHS staff in charge of the selected infectious disease control</li> <li>- Infectious-diseases related studies, MOH/GHS</li> <li>- PHRL</li> <li>- Development Partners (UNICEF, WHO, DANIDA, DfID, USAID, etc)</li> </ul>	<ul style="list-style-type: none"> <li>- Literature Review</li> <li>- One-on-one interviews</li> </ul>
<p>6. What influence has the achievement or non-fulfillment of the overall goal had on the policy and the health sector programmes of Ghana?</p>	<p>6.1 To what extent did NMIMR recommendations on infectious diseases influenced health policy and programmes?</p> <p>6.2 Were there gaps experienced in health policy and programmes due to non-application of recommendations on infectious diseases?</p>	<p>6.1.1 Number of recommendations made by NMIMR that formed the basis for MOH policy and programmes from 2004-2007</p> <p>6.2.1 Assessed constraints and gaps in health policy and control methods on infectious diseases</p>	<ul style="list-style-type: none"> <li>- MOH annual report</li> <li>- MOH/GHS Action Plan</li> <li>- NMIMR staff trained on each selected infectious disease</li> <li>- MOH/GHS staff in charge of the selected infectious disease control</li> <li>- Infectious-diseases related studies, MOH/GHS</li> <li>- The Health Sector Programme of Work, 2007 - 2011</li> <li>-PHRL</li> </ul>	<ul style="list-style-type: none"> <li>- Literature review</li> <li>-One-on-one interviews</li> </ul>

Impact	7. What kinds of public benefits has NMIMR brought about since the terminal evaluation?	7.1 What benefits have members of the public realized from NMIMR activities (research and training)	7.1.1 Assessed benefits and gains from NMIMR activities	- NMIMR staff - NMIMR Reports on Training and Research	- Literature review -One-on-one interviews
		7.2 What benefits have been realized by people from Dangme East under the community-based measles surveillance system established by NMIMR?	7.2.1 Sustainability of operations by the District Health Management Team (DHMT) 7.2.2 Increase in number of beneficiaries of measles immunization since 2002 7.2.3 Decrease in measles-specific mortality rate	- NMIMR related unit - Dangme East DHMT records and staff	
		7.3 What benefits have been realized by people from Dangme East under the Global Parasite Control Initiative (GPCI) initiated under the NMIMR?	7.3.1 Achievements of the model project in terms of deworming, education, and technical capacity-building	- WACIPAC - Dangme East DHMT records and staff	- Literature review -One-on-one interviews
	8. Have any unintended/ripple effects been observed since the terminal evaluation?	8.4 What positive development has occurred, from within and outside NMIMR, not necessarily targeted by the Project?	8.4.1 Assessed positive and negative consequences of the Project that were not identified under the PDM	- NMIMR staff and MOH/GHS staff in charge of the selected infectious disease control Infectious-diseases related studies, MOH/GHS	- Literature Review  - One-on-one interviews
	9. Is there high possibility that the achievement level of the project goals will be enhanced in the next three years?	9.1 What are the indicators that the Project Goals would be enhanced for the next 3 years?	9.1.1 What are the current conditions that will enhance or reduce GOG capacity to control infectious diseases?  9.1.2 What are the current conditions that will enhance or reduce GOG capacity to reduce the prevalence of infectious diseases?  9.1.3 What are the current conditions that will enhance or reduce the relevance of NMIMR outputs to the health sector?	- MOH annual report - MOH/GHS Action Plan - NMIMR staff trained on each selected infectious disease - MOH/GHS staff in charge of the selected infectious disease control - Infectious-diseases related studies, MOH/GHS - The Health Sector Programme of Work, 2007 – 2011 -PHRL - Development Partners (UNICEF, WHO, DANIDA, DfID, USAID, etc) - MOH/GHS Policy-Makers	- Literature review -One-on-one interviews
		9.2 Are the policy and institutions of Ghana in favour of the sustainability of project effects?	9.2.1 What is the current government policy, priorities on medical research  9.2.2 How do the major health stakeholders view research and training on the selected infectious diseases?		

EVALUATION CRITERIA	EVALUATION QUESTIONS		STANDARDS OF ACHIEVEMENT	SOURCE OF DATA	RESEARCH METHOD
	MAJOR QUESTIONS	SPECIFIC QUESTIONS	NECESSARY INFORMATION FOR ASSESSMENT		
<b>Sustainability</b>	1. How has NMIMR been maintaining the project purpose to strengthen research capacity, since the terminal evaluation ?	1.1 Has the research capacity of NMIMR been improved since the time of terminal evaluation?	1.1.1 Increase in number and quality of publicized theses, dissertations or treatises on areas of selected infectious diseases.	<ul style="list-style-type: none"> <li>- NMIMR literature resources</li> <li>- NMIMR Annual Reports</li> <li>- NMIMR staff</li> <li>- MOH/GHS staff in charge of the selected infectious disease control</li> <li>- Infectious-diseases related studies, MOH/GHS</li> <li>- The Health Sector Programme of Work, 2007 - 2011</li> <li>-PHRL</li> <li>- List of Personnel Requirements and (Current) Complement</li> <li>- Training Records</li> <li>- Development Partners (UNICEF, WHO, DANIDA, DfID, USAID, etc)</li> <li>- MOH/GHS Policy-Makers</li> </ul>	<ul style="list-style-type: none"> <li>- Literature review</li> <li>-One-on-one interviews</li> </ul>
		1.2 What efforts on dissemination of researches have NMIMR instituted?	1.2.1 Frequency of presentations at academic or other dissemination meetings		
	1.3 Are NMIMR research projects made consistent with the priorities of the country's health sector?	1.3.1 Number of researches (publications, theses, dissertations) that tackle the country's health research priorities 1.3.2 Extent of NMIMR inputs to the Health Sector 5-Year Program of Work			
1.4 Are there adequate personnel to sustain the researches on selected infectious diseases?	1.4.1 The number of trained staff/specialists, 2004 – 2007				
1.5 To what extent has the role of NMIMR on infectious diseases been enhanced since the terminal evaluation	1.5.1 Perception of NMIMR role on infectious diseases within the health sector				
	1.6 Has the NMIMR attracted more funding for research?	1.6.1 Annual Research budget for 2004-2007 1.6.2 Research grants to NMIMR by partners, 2004 - 2007 1.6.3 Number of Research Proposals currently being prepared for funding	<ul style="list-style-type: none"> <li>- Research Unit</li> <li>- Accounting Unit</li> </ul>	<ul style="list-style-type: none"> <li>- Literature review</li> <li>-One-on-one interviews</li> </ul>	
2. How has NMIMR been maintaining the project purpose to strengthen training capacity since the terminal evaluation?	2.1 Have there been maintenance or increase in infectious-related diseases training?	2.1.1 Training courses offered in 2004-2006?	<ul style="list-style-type: none"> <li>- Training Reports</li> <li>- The Director and Training Head of NMIMR</li> <li>- Selected participants of those who attended the courses</li> </ul>	<ul style="list-style-type: none"> <li>- Literature review</li> <li>-One-on-one interviews</li> </ul>	
	2.2 To what extent are training to be offered in the future?	2.2.1 Training courses planned to be offered in 2007 and beyond?			
	2.3 Has the quality and variety of the training courses observed since the terminal evaluation?	2.3.1 Assessed quality and variety of training courses			
	2.4 Are there adequate personnel to sustain the researches on selected infectious diseases?	2.5 The number of trained staff/specialists, 2004 – 2007			
	2.5 Have more people showed interest in the	2.5.1 The number of participants of training			



**Sustai-  
nability**

	NMIMR training courses?	courses at NMIMR, 2004 - 2007 2.5.2 The number of applicants/enquiries about training courses at NMIMR 2.5.3 Profession and affiliation of participants in NMIMR training courses		
3. How has NMIMR been maintaining the project outputs (including institutionalized activities) and services since the terminal evaluation?	For the related output, 3.1 To what extent have researches been conducted? 3.2 Have the laboratory and equipment been utilized properly and maintained?  3.3 How are technical systems operated and maintained?	3.1 Number of researches conducted on related topic between 2004 and 2007 3.2.1 Use of equipment and state of functionality 3.2.2 Manner of laboratory operations  3.3.1 Manner of technical systems operations (e.g. measles surveillance, GPCI implementation, sharing of laboratory information, etc.)	- NMIMR literature resources - NMIMR Annual Reports - NMIMR staff - MOH/GHS staff in charge of the selected infectious disease control - Infectious-diseases related studies, MOH/GHS - The Health Sector Programme of Work, 2007 - 2011 -PHRL	- Literature review -One-on-one interviews -Observation
4. To what extent and in which way has NMIMR collaborated with other related organization?	4.1 What efforts have been made to realize the smooth cooperation between NMIMR and MOH/GHS?  4.2 What collaborations have been made with international organizations?	4.1.1 The number of meetings where NMIMR and MOH/GHS can exchange their ideas 4.1.2 Development/Establishment of communication systems between NMIMR and MOH/GHS 4.1.3 Number of collaborative researches and training with MOH/GHS and other local health organizations  4.2.1 Number of collaborative researches, training, and other projects with international organizations	- NMIMR literature resources - NMIMR Annual Reports - NMIMR staff - MOH/GHS staff in charge of the selected infectious disease control -PHRL - Donor partners	- Literature review -One-on-one interviews
5. What factors are contributing to or inhibiting the sustainability of the project effects?	5.1 What conditions exist within and outside NMIMR that will enhance or prevent the Institute to contribute to productive researches and building of capacity in the area of infectious diseases?  5.2 Are the policy and institutions of Ghana in favour of the sustainability of the project effects?	5.1.1 Assessed constraint and conducive factors to NMIMR research activities 5.1.2 Assessed constraint and conducive factors to NMIMR training activities  5.2.1 Policy on medical researches of the GOG, MOH, and MOES 5.2.1 Budget allocation to medical researches in particular, or scientific researches in general, 2004-2006	- NMIMR literature resources - NMIMR Annual Reports - NMIMR staff - MOH/GHS staff in charge of the selected infectious disease control  - Policy papers - GOG Budget Statements - NMIMR accounting records	- Literature review -One-on-one interviews  - Literature review -One-on-one interviews

<b>Sustai- nability</b>	6. Has NMIMR had sufficient management, administrative and resource capacity to maintain the project effects?	6.1 Are the current staff complement of NMIMR able to sustain follow-up activities to promote the benefits of the project?  6.2 Are current and planned financial structure able to meet the research and training requirements of related areas?	6.1.1 Number or personnel assigned to relevant NMIMR technical units and administrative units  6.2.1 Budget allocation to researches and training events 2007 and beyond	- NMIMR personnel file - NMIMR Director - NMIMR accounting records	- Literature review -One-on-one interviews
	7. Is there any mechanism/system which will maintain and diffuse the techniques transferred to NMIMR?	7.1 What are existing and potential mechanisms through which research and training techniques gained from the Project can be transferred to other institutions?	7.2 Assessed measures for dissemination and transfer of know-how from NMIMR to certain institutions	- NMIMR literature resources - NMIMR Annual Reports - NMIMR staff - MOH/GHS staff in charge of the selected infectious disease control	- Literature review -One-on-one interviews

EVALUA- TION  CRITERIA	EVALUATION QUESTIONS		STANDARDS OF ACHIEVEMENT  NECESSARY INFORMATION FOR ASSESSMENT	SOURCE OF DATA	RESEARCH  METHOD
	MAJOR QUESTIONS	SPECIFIC QUESTIONS			
<b>Rele- vance</b>	1. Were the purpose and outputs of the Project relevant to the role of NMIMR in the health sector in Ghana?	1.1 What is the mandate of NMIMR and how is this interpreted by NMIMR staff and the major stakeholders in public health sector?  1.2 How did the purpose and outputs of the Project contributed to the mandate as perceived by NMIMR staff and the major stakeholders in the public health sector?	1.1.1 Mandate of NMIMR as documented 1.1.2 Perceived role of NMIMR from the point of view of NMIMR staff and major stakeholders  1.2.1 Assessed contribution of the Project purpose and outputs to this perceived role	- Annual NMIMR Reports - Minutes of Annual Stakeholder Workshops - Development Partners (UNICEF, WHO, DANIDA, DfID, USAID, etc) - MOH/GHS Policy-Makers - NMIMR Management and staff -University of Legon official	- Literature review -One-on-one interviews

### **ANNEX 3: LIST OF INTERVIEWED PERSONS**

1. Prof. Alexander Nyarko, Director, NMIMR
2. Prof. Michael Wilson, Deputy Director, NMIMR
3. Mr. Okyere Boateng, Assistant Registrar, NMIMR
4. Dr. Kwasi Addo, Head, Bacteriology Unit, NMIMR
5. Dr. Phyllis Addo, Head, Animal Experimentation, NMIMR
6. Dr. K.M Bosompem, Head, Parasitology Unit, NMIMR
7. Dr. Benjamin Gyan, Research Fellow, Immunology Unit, NMIMR
8. Dr. Frank Bonsu, Programme Manager, NTP
9. Dr. G. Amofa, Director, Public Health Division, MOH
10. Dr. John Gyapong, Head, Health Research Unit, GHS
11. Dr. Nii Akwei Addo, Programme Manager, NACP
12. Prof. Sakyi-Awuku Amoa, Director-General, GAC
13. Dr. Kofi Ahmed, Chief Medical Officer, MOH
14. Ms. Veronica Bekoe, Head, PHRL
15. Dr. Harry Opata, Programme Officer, Communicable Diseases Prevention & Control, WHO
16. Dr. Victor Ankrah, Project Officer, Health, UNICEF
17. Dr. Justice Hoffmann, District Health Director, Dangme East
18. Ms. Dorothea Waecker, Governance Advisor, European Union



## ANNEX 4: WORKSHOP

Agenda of Ex-post Evaluation Study Workshop on  
The Infectious Disease Project  
At Noguchi Memorial Institute for Medical Research (NMIMR) in Ghana

20th March 2007

Seminar Room of NMIMR, Legon, Accra

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9:45 -- 10:00	Reception
10:00 -- 10:10	<b>Opening Address</b> Mr. Hiroshi Murakami, Resident Representative, JICA Ghana Office
10:10 -- 10:30	<b>Introduction of The Infectious Disease Project at NMIMR and Outline of The Ex-post Evaluation Study</b> Ms. Satomi Shimizu, Project Evaluation Advisor, JICA Ghana Office
10:30 -- 11:00	<b>Presentation of the Finding of the Ex-post Evaluation Study</b> Ms. Marian Tadeffa-Kubabom, Development Research, Planning & Management Consultant
11:00 -- 12:30	<b>Discussion on the Presentation of the Finding of the Ex-post Evaluation Study</b> Facilitated by Ms. Satomi Shimizu
12:30 -- 12:45	<b>Closing Remarks</b> Dr. Alexander K. Nyarko, Professor & Director, NMIMR
12:45 --	<b>Lunch</b>

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## WORKSHOP PARTICIPANTS

Name	Position	Organization
Dr. Kofi Ahmed	Chief Medical Officer	Ministry of Health
Dr. Nii Akwei Addo	Programme Manager National Aids and STI Programme	NACP
Dr. Victor Ankrah	Project Officer, Health	UNICEF
Dr. Mark Young	Head, Health Section	UNICEF
Dr. Moses K. S. Aikins	Lecturer, School of Public Health	University of Ghana
Mr. Ekow Biney	Public Health Reference Laboratory	Korle-bu Teaching Hospital
Prof. A.K. Nyarko	Director	NMIMR
Prof. M.D. Wilson	Deputy Director	NMIMR
Dr. Mubarak Osei-Kwasi	Senior Research Fellow	NMIMR
Dr. Kwasi K. Addo	Head, Dept of Bacteriology	NMIMR
Dr. William Ampofo	Head, Dept of Virology	NMIMR
Prof. B.D. Akanmori	Head, Dept of Immunology	NMIMR
Prof. N-A. Ankrah	Head, Dept of Clinical Pathology	NMIMR
Prof. G. E. Armah,	Head, Dept of Electron microscopy	NMIMR
Dr. Ben Gyan	Coordinator, Students Placement/Research	NMIMR
Mr. Victor Korda	Executive Secretary	NMIMR
Mr. Okyere Boateng	Assistant Registrar	NMIMR
Mr. Worlanyo Torvinyo	Assistant Registrar	NMIMR
Mr. Kofi Addison	Chief Accountant	NMIMR
Mr. E. Lamptey	Head of Maintenance	NMIMR
Mrs. Marian Tadeffa-Kubabom	Ex-Post Evaluation Consultant	
Ms. Francisca A. Soto	Assistant	
Mr. Hiroshi Murakami	Resident Representative	JICA
Mr. Yuji Wakasugi	Assistant Resident Representative	JICA
Ms. Satomi Shimizu	Project Evaluation Advisor	JICA
Ms. Maki Ozawa	Project Coordinator, WACIPAC	JICA

## REVIEW REPORT

The Recent Conditions of  
Noguchi Memorial Institute for Medical Research (NMIMR)

Preliminary Study for the Ex-post Evaluation on  
The Infectious Disease Project at NMIMR in Ghana





## REVIEW REPORT

### 1. POSITION OF THE ORGANIZATION

The Noguchi Memorial Institute for Medical Research (NMIMR) is a semi-autonomous Institute of the University of Ghana established in 1979. It is a member of the College of Health Sciences (CHS) at the University of Ghana, the premier tertiary organization in the country. Alongside the NMIMR, other units under the umbrella of the College are the Medical School, Dental School, School of Public Health, School of Allied Health Sciences and the School of Nursing.

As a unit belonging to the academia, NMIMR falls under the jurisdiction of the Ministry of Education bounded by its policies and regulations. The University Council appoints the Director of the Institute.

The broad objectives and mandate of NMIMR are:

- To conduct research into infections and communicable diseases prevalent in Ghana and into nutritional problems:
- To provide training opportunities for post graduate students in medical research;
- To provide specialised laboratory diagnostic and monitoring services to improve the quality of public health programmes.

To implement the above mandate, the Institute constituted nine (9) academic units supported by laboratory and training facilities. Although a Research Management Unit was introduced in the latter part of 2006, its system of operations is still being organized. The figure on the next page shows the organizational structure of the Institute.

### 2. NMIMR ACTIVITIES

The Institute continues to pursue three major service areas:

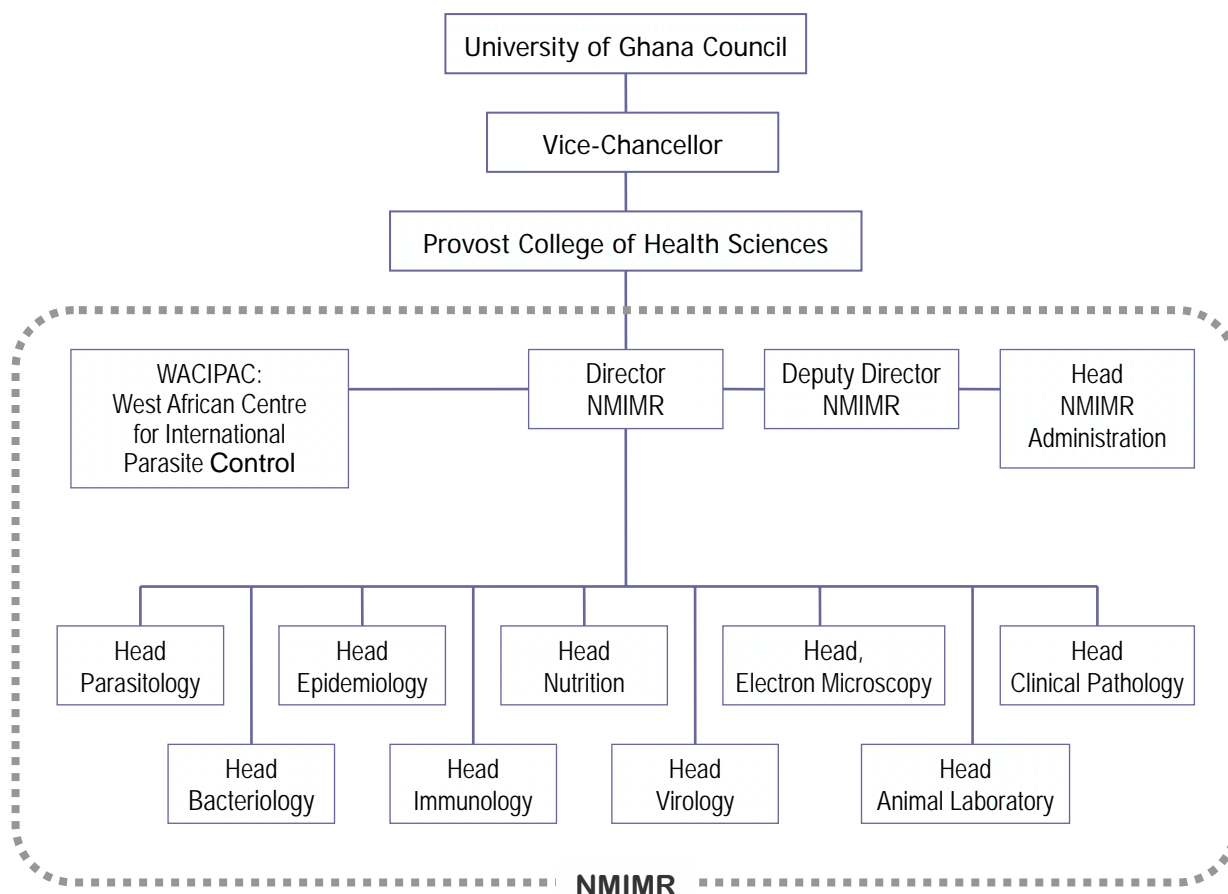
- Research into problems of public health importance
- Training on medical research to post-graduate students and technicians
- Specialized laboratory diagnostic and monitoring to support the public health programmes of the Ghana Health Services (GHS), Ministry of Health (MOH) as well as other related health agencies.

#### 2.1 TRAINING

Twenty-eight (28) senior members of the Institute serve in the a 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.

**Figure: Institutional Framework of Noguchi Memorial Institute for Medical Research (NMIMR)**



Training provided within the Institute can either be Sponsored or Non-Sponsored, in which case the Institute does not exact charges or fees on the student, and even puts up the needed supply and re-agents for the students' research.

Sponsored training covers the research work of postgraduate students, mostly foreigners, involved in a collaborative research project between the Institute and another external organization. Grants supporting these projects also pay for research cost of the students. It is under such scheme, that some of the Institute's staff was able to pursue higher postgraduate work.

Non-sponsored training takes on various forms, namely:

- a) Student attachments to the research units of the Institute: In order to build interest in scientific research, students from Polytechnics, Vocational Institutes and Universities are taken in, spending fixed periods at a time.

- b) Student research project: Students from Polytechnics, Vocational Institutes and Universities are able to use the facilities free of charge and the Institute provides most of the supplies and reagents.
- c) Research Studentship Programme: Using part of research project grants, the Institute is able to select M.Phil, PhD, or undergraduate students to conduct their research work that contributes to the project. The principal investigator or any of the co-investigators (being of senior member status) supervises the student.

Table 1 shows the number of students trained under the above training programmes from 2000 - 2006.

**Table 1: 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 (Medical/Dental Students)	-	-	-	3	12	-	15
Total	6	7	29	43	97	108	290

Source: NMIMR Administration, February, 2007

In-Service Training is addressed to the Institute's staff as well as the middle level manpower staff of the GHS. Participants who have attended these training workshops have been exposed to some of the following subject areas: malaria control, laboratory diagnostics of parasitic diseases, quality assurance systems for laboratory diagnosis of tuberculosis, malaria, filariasis, buruli ulcer, and humonddeficiency virus (HIV) screening. HIV/AIDS (Acquired immunodeficiency syndrome) training in prevention of mother to child transmission of HIV using antiretroviral as well as training of counsellors for HIV/AIDS prevention and care have also been organised.

The Institute has also conducted collaborative International training workshops with agencies such as JICA, WHO, National Institute of Health (NIH)-USA, US Naval Medical Research Centre, African Malaria Network, and the Danish Bilharziasis Laboratory. Subjects touched on by the various international workshops included:

- a) Research Ethics;
- b) Good laboratory Practice;
- c) Good Clinical Practice;
- d) Clinical Trials Methodology;
- e) Standardization of Immunological Assays for Vaccine Studies; and
- f) Diseases of Public Health Importance.

The West African Centre for International Parasite Control (WACIPAC), currently housed under NMIMR and managed by the Institute's staff with JICA counterparts, have organized the following international training:

- a) "Planning, Implementing and monitoring of school-based parasitic diseases control programmes for Health and Education Managers." Twenty-five participants from ten member countries attended the training held in June and July 2004.
- b) "School-based Parasitic Diseases Control - Start-up Project Proposal". Eighteen programme managers from Ministry of Health and Education, and scientists from the Research Institutions of six member countries attended this training held in June 2005.
- c) "Planning, Implementing and Monitoring of school-based parasitic diseases control programmes for Health and Education Managers." Fifteen programme managers from Ministry of Health and Education of 6 member countries attended this training held in October to November 2006.

### **Staff Development**

Continuing staff development is a policy of the Institute and normally translated into a Staff Development Plan handled by the Office of the Deputy Director. The staff either gets sponsored by the Institute or by another organization, mostly foreign. By 2004, 2 staff successfully completed their Ph.D. As of end of 2005, 11 members of staff are pursuing programmes leading to Ph.D. and another 7 for their Masters degree. The staff is also supported in the publication of their works, enabling them to gain career advancement within the University system.

## **2.2 Research, Specialized Laboratory Diagnostic and Monitoring**

Researches are done by the various Units that also specialize in laboratory diagnosis and monitoring of various diseases. The 9 Units consist of: Bacteriology, Clinical Pathology, Electron Microscopy/Histopathology, Epidemiology, Immunology, Animal Experimentation, Nutrition, Parasitology, and Virology. The following description of the respective Units was adopted from the NMIMR website, except the Electron Microscopy and Parasitology Units.

### **A. Bacteriology Unit**

The Bacteriology Unit has expertise in the area of isolation and characterization of bacteria of public health importance including tuberculosis, agents of sexually transmitted infections, food / water hygiene including diarrhoea causing microbes and zoonoses.

The Bacteriology Unit's P3 TB Laboratory acts as the National TB Reference Laboratory and plays an important role in the organization and maintenance of the National TB Laboratory Network, development of training manuals and organization of laboratory training and implementation of nationwide TB laboratory Quality Assurance, TB culture, species identification and anti-TB drug resistance surveillance.

### **B. Clinical Pathology Unit**

The Clinical Pathology Unit has developed strong research programmes in Natural Product-based Drug Development Research, pharmacogenetics, metabolism and environmental toxicology (health effects of heavy metal (lead, mercury) pollution and mycotoxin contamination of food).

### **C. Electron Microscopy Unit**

The Electron Microscopy is one of the newest Units to be added to the Institute's structure. The acquired electron microscopy capability coupled with molecular techniques allowed the Unit to undertake diarrhoea studies especially investigating the role of rotavirus in severe diarrhoea. The Institute presently has housed the West African Rotavirus Reference Laboratory, that coordinates the African Rotavirus Surveillance Network (ARSN) and provide technical and administrative support for diarrhoea surveillance studies.

### **D. Epidemiology Unit**

The Epidemiology Unit mainly focuses on various aspects of the clinical epidemiology of malaria and anti-malaria drug resistance in Ghana. It is in the forefront of research and policy into malaria treatment and vaccines and is developing the institutional capacity to undertake drug trials. The Unit also plays a principal role in offering support for study design and data management to other departments and provides supervision of the Institute's Internet Technology facilities which provides 24hour online service.

### **E. Immunology Unit**

The Immunology Unit specialises in parasite immunology focusing on malaria research involving pathogenesis of severe malaria, malaria in pregnancy, invitro anti-malaria drug efficacy testing, effects of micronutrient supplementation on childhood malaria outcome and malaria vaccine related immunological studies.

### **F. Animal Experimentation Unit**

The Animal Experimentation Unit is situated in a separate building with Barrier, Conventional and Experimentation facilities under positive, normal and negative pressure respectively, for in-house breeding, maintenance and experimentation on specific pathogen free rodents/lagomorphs, ruminants and non-human primates. There are few facilities of this nature in sub-Saharan Africa. The facility is currently responsible for the breeding and supply of quality laboratory animals to research/tertiary institutions of higher learning in Ghana. The Unit also plays a supportive role to other departments, research staff and students requiring animals for their research work.

### **G. Nutrition Unit**

The Nutrition Unit is recognised for its work on micronutrient deficiency and supplementation and has worked extensively on food security, infant and young child nutrition with focus on

breast-feeding and the feeding of children born to HIV-positive mothers. The Unit is an internationally accredited laboratory for Vitamin A analysis

#### **H. Parasitology Unit**

The Unit conducts laboratory and field research to investigate the various sicknesses caused by parasites such as malaria, schistosomiasis, Lymphatic Filariasis, Trypanosomiasis, Cryptosporidiosis, Toxoplasmosis, worm infestations, etc. Researches include development of cost-effective assay for schistosomiasis, toxoplasmosis, epidemiological investigations into parasitic diseases in certain target subjects and areas, operational research in an integrated, school-based approach to soil-transmitted helminthiasis (STH) control, etc.

Immediately following research, the Unit transfers knowledge through training of laboratory technicians to undertake the improved diagnostic techniques.

#### **I. Virology Unit**

The Virology Unit is involved in characterization of HIV subtypes circulating in Ghana, resistance to anti-retroviral agents, drug discovery programmes including vaginal microbicides and herbal preparations, prevention of mother-to-child transmission of HIV; viral haemorrhagic fevers, hepatitis B and C, herpes zoster and establishing diagnostic capacity for avian influenza and other viruses.

The Virology Unit hosts the National and Regional Reference Laboratory for the Poliomyelitis eradication effort, collaborates with the National Public Health Reference Laboratory (PHRL) in HIV serology, acts as the National Quality Assurance provider for the HIV sentinel survey, and hosts training sessions for CD4 T cell enumeration for laboratory scientists in conjunction with the National AIDS Control Program (NACP).

#### **Research Dissemination**

Research studies done by Institute staff are targeted for publication in journals. 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 (see Table 2). The total publications if 2003 will be counted were 65. The top 5 publications in terms of number of NMIMR researches holdings between 2003 and 2006 were as follows:

- a) Ghana Medical Journal - 16
- b) Tropical Medical International Health - 13
- c) Infection Immunology - 8
- d) Annals of Tropical Medicine & Parasitology - 8
- e) Acta Tropical - 6

Among all the subject areas/diseases, malaria, HIV/AIDS, and diarrhoea have been the topics of most Institute researches from 2004 to 2006, a trend just continuing from the outcomes of 2003.

The Institute also seeks to share the outcomes of their researches through weekly institutional seminars which offer the opportunity for young and senior scientists to report on their respective research works.

Also, an Annual Research Meeting (ARM) was started in 2001. The annual meeting aims to disseminate very recent research findings generated by scientists from within and outside the Institute, as well as share the rich experiences of other health researchers within Ghana and abroad. The findings are hoped to receive the serious consideration of the stakeholders responsible for implementing health policies in the country.

**Table 2: Journals Publishing NMIMR/Staff Researches: 2003 – 2006**

	<b>JOURNALS</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>TOTAL</b>
1	Ghana Medical Journal	7	5	4		16
2	Tropical Medical International Health	4	7	1	1	13
3	Infection Immunology	4	3		1	8
4	Annals of Tropical Medicine & Parasitology	1	4	3		8
5	Acta tropical		3	2	1	6
6	East Africa Medical Journal	2	2			4
7	Journal of Clinical Microbiology	1		3		4
8	Malaria Journal	1		2		3
9	Journal of Medical Microbiology		2		1	3
10	West Africa Medical Journal	1	1		1	3
11	Journal Infectious Diseases & Veterinary			1	2	3
12	Journal of Tropical Medicine & Hygiene			1	2	3
13	Journal of Tropical Pediatrics	1		1	1	3
14	Journal of Ghana Science Assoc	1	1			2
15	Clinical Infectious Diseases	1		1		2
16	Medicine and Biology		2			2
17	Veterinary Entomology		1	1		2
18	Bioorganism Medicine Chem Letter		1		1	2
19	Antivirus Chem Chemotherapy		1	1		2
20	Journal of Clinical Exp Immunology		1		1	2
21	Journal of Clinical Exp Immunology		1		1	2
22	Emerging Infectious Diseases			1	1	2
23	BMC Immunology			1	1	2
24	N N Nucleic Acids			2		2
25	Journal of Bacteriology			1	1	2
26	Journal of Ethnopharmacology			2		2
27	Int Journal for TB				2	2

28	Ghana Dental Journal	1	1			2
29	Journal of Medicine and Genetics	1				1
30	Antimicrobiological Agents in Chermotherapy	1				1
31	Livestock Research for Rural Development	1				1
32	MERA: Journal Choice	1				1
33	European Cytokine Network	1				1
34	Medicine and Hygiene	1				1
35	Vaccine	1				1
36	Annual Tropical Medicine and Parasitology		1			1
37	Social Tropical		1			1
38	Phytother Research		1			1
39	Central African Journal of Medicine		1			1
40	Vascular Pharmacology		1			1
41	African Health Monitor		1			1
42	Anti-Viral Research		1			1
43	Journal of Experimental Medicine		1			1
44	Biochemistry and Biochemical Research		1			1
45	Applied Environmental Microbiology		1			1
46	Vascular Pharmacology					
47	Pigment Ce ll Research					
48	Risk Analysis					
49	English Journal for Medicine					
50	Medical Princ Practice			1		1
51	African Entomology			1		1
52	Int Journal for Environmental Research			1		1
53	Scan Journal of Immunology			1		1
54	Journal of Infectious Diseases			1		1
55	Int Journal for Molecular Medicine			1		1
56	Journal of Biochemistry			1		1
57	PLos Medicine				1	1
58	Insights Health				1	1
59	Viral Immunology				1	1
60	J Leukoc Biology				1	1
61	Journal of Medicine & Virology				1	1
62	Ethno Disease				1	1
63	Journal of Pediatrics Int				1	1
64	Journal of Dermatology				1	1
	<b>Total</b>	<b>32</b>	<b>50</b>	<b>35</b>	<b>26</b>	<b>143</b>

Source: NMIMR Publication List, 2003-2006



### 3. FUND ACQUISITION AND BUDGET ALLOCATION

The Institute prepares an annual Medium Term Expenditure Framework (MTEF). Table 3 gives a summary of the Institute's MTEF for the years 2005, 2006, and 2007 and as submitted to the University Administration and for onward submission 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 3: 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 rest of the budgetary requirements have to be generated from external sources, mostly through donors engaging the Institute for certain researches. 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.

For 2007, the submitted Projected Income figure included 3,000,000,000 cedis from the Ghana Education Trust Fund (GETFUND).

**Table 4: Non-Tax Revenue/Internally Generated Funds:  
Summary of Revenue Projection, 2005 - 2007 (In Cedis)**

Type of Revenue	2005	2006	2007
Hire of Conference Hall	28,000,000	28,000,000	49,011,000
Hire of Transport	60,000,000	60,000,000	210,370,976
Laboratory Tests	24,000,000	24,000,000	112,341,600
Sale of Laboratory Animals	3,000,000	3,000,000	8,250,000
Consultancy	20,000,000	20,000,000	120,000,000
Administrative Charges	72,000,000	72,000,000	60,000,000
Liquid Nitrogen			161,280,000
Telephone			859,500
TOTAL	207,000,000	207,000,000	722,113,076
As % of Total Budget	0.9 %	0.8%	2.5%

The Institute generates internal income, but, this hardly covers more than 3% of their budget. Funds from this source are used to partially cover administrative and service activities. The areas for which they are able to charge for services is shown in Table 4.

Service activities are mostly done under the nine (9) research units, thus, each unit is asked to prepare its estimated budget for a given year. Table 5 gives the estimates for 2005 to 2007.

**Table 5: Budget Requirements by Units , 2005 – 2007 (in cedis)**

Department	2005	2006	2007
Clinical Pathology	1,340,910,000	329,200,000	2,233,269,105
Electron Microscopy	83,000,000	83,100,000	73,100,000
Epidemiology	82,200,000	82,200,000	91,740,000
Immunology	79,650,000	79,800,000	95,760,000
Laboratory Animals	329,039,004	329,140,000	451,200,000
Nutrition	244,920,000	244,920,000	285,624,000
Parasitology	371,680,000	371,680,000	350,680,000
Virology	242,950,000	242,950,000	290,775,000
Bacteriology	238,320,000	238,570,000	285,984,000
TOTAL	3,012,669,004	2,001,560,000	4,158,132,105

#### **4. ESTABLISHMENT LIST OF NMIMR AND ACTUAL ALLOCATION OF PERSONNEL**

Table 6 lists down the personnel of the Institute from 2005 to 2007, and the personnel complement for each Unit as of February 2007 is given in Table 7. The data follows the approved establishment list.

**Table 6: NMIMR Personnel, 2005 - 2007**

Personnel	2005	2006	2007
Director	1	1	1
Professor	1	3	3
Associate Professor	3	1	4
Senior Research Fellow	11	11	9
Assistant Accountant	1	1	1
Research Fellow	8	8	10
Assistant Registrar	1	1	1
Chief Technician	19	18	22
Principal Technician	27	27	24
Senior Technician	19	15	14
Technician	12	13	10
Senior Clerk	13	12	14
Clerk Grade I	13	10	10
Clerk Grade II	9	9	4
Guard Grade I	5	7	2
Guard Grade II	2	0	7
Laboratory Cleaners	19	20	21
TOTAL	164	157	157

**Table 7: Establishment List and Actual Allocation of Personnel<sup>1</sup>**

Unit	Post / Grade	Approved Establishment	At Post	Vacant
ADMINISTRATIVE	Director	1	1	-
	Assistant Registrar	2	3	-
	Accountant	1	1	-
	Librarian	1	1	-
	Administrative Assistant	3	4	-
	Systems Analyst	1	-	1
	Accounting Assistants	6	5	1
	Clerks	5	3	2
	Library Assistant	1	1	-
	Storekeepers	3	2	1
	Accounts Clerk	1	-	1
	Receptionist	2	2	-
	Assistant Transport Officer	1	2	-
	Drivers	11	10	1
	Artisans	2	1	1

<sup>1</sup> Remarks: Alongside the gap between approved establishment and actual positions filled, there are positions with personnel exceeding the provision: Assistant Registrar, Administrative Assistant, Works Superintendent, Research Fellow for Immunology, and Research Assistant for Laboratory Animals

	Works Superintendents	5	6	-
	Technician	1	-	1
	Tradesman	2	1	1
	Security Guards	10	10	-
	Watchmen	10	1	9
	Labourers	10	5	5
	Messengers/Cleaners	12	5	7
EPIDEMIOLOGY	Research Fellow	4	3	1
	Research Assistant	3	1	2
	Technologist	1	-	1
	Technician (Field)	4	2	2
	Nursing Officer	4	1	3
	Technical Assistant	-	1	-
NUTRITION	Research Fellow	4	1	3
	Research Assistant	4	2	2
	Technician	4	1	3
VIROLOGY	Research Fellow	4	4	-
	Research Assistant	4	3	1
	Technologist	2	1	1
	Technician	4	2	2
	Laboratory Assistant	1	-	1
PARASITOLOGY	Research Fellow	4	4	-
	Research Assistant	4	2	2
	Technician	4	4	-
	Laboratory/Field Assistant	2	1	1
BACTERIOLOGY	Research Fellow	3	3	-
	Research Assistant	3	3	-
	Technologist	2	1	1
	Technician	3	2	1
IMMUNOLOGY	Research Fellow	3	4	-
	Research Assistant	3	1	2
	Technician	3	2	1
CLINICAL PATHOLOGY	Research Fellow	4	3	1
	Research Assistant	4	3	1
	Technologist	2	1	1
	Technician	5	1	4
ELECTRON MICROSCOPY	Research Fellow	2	1	1
	Research Assistant	2	0	2
	Technician	2	2	-
	Laboratory Assistant	1	-	1
LABORATORY ANIMALS	Research Fellow	2	1	-
	Research Assistant	2	4	-
	Animal Technician	4	2	2
	Technical Assistant	1	1	-
TOTAL		199	132	74

Source: NMIMR Administration, AO February 2007

## 5. FACILITIES AND EQUIPMENT

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

- 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 include the following:

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

A genetic analyzer was added to the assets of the Institute under the National Aids Control Programme (NACP).

Maintenance of the laboratories and equipment is reportedly treated as a priority of management. However, the limited resources available on a yearly basis render the policy very difficult to implement. The Institute conducts regular maintenance, but not according to standards. 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.

## 6. NMIMR RESEARCH POLICY AND FUNDING

The principal research areas of the Institute consist of the following:

- a) *Parasitic Diseases*: Malaria, Schistosomiasis, Lymphatic Filariasis, Onchocerciasis, Trypanosomiasis, Cryptosporidiosis, Toxoplasmosis, Worm Infestations, and Parasite Immunopathology;
- b) *Viral Diseases*: HIV/AIDS, Poliomyelitis, Viral Diarrhoea, Viral Haemorrhagic Fevers, Measles, Neonatal Tetanus, Yellow Fever, Pertussis, Hepatitis, Bacterial Meningitis, and Rubella;
- c) *Bacterial Infections*: Tuberculosis, Buruli Ulcer, Sexually Transmitted Disease,

- d) *Nutritional Problems and Food Safety*: Infant and young child nutrition, Food Security, Micronutrients, and Dietary Intakes;
- e) *Non-Communicable Health Problems*: Safe Motherhood, Metabolic Disorders, Aflatoxins, Heavy Metals, and Sickle Cell Disease; and
- f) *Herbal Medicines*.

There seem to be no well-defined policy for research except for what is indicated in the mandate, that is, to conduct research into problems of public health importance. In practical terms, researches are pursued based on the interest areas of individual researcher/scientist. They primarily pursue researches in order to further their career within the University system. Publications of research studies by a Research Fellow are required for promotion.

Increasingly, however, researches in the field of HIV/AIDS, tuberculosis, malaria, and buruli ulcer have been in line with the requirements of the GHS, particularly within the respective Control Programmes.

The range of researches conducted by the Institute for the past 3 years were combination of the following types of researches<sup>2</sup>:

- Basic (Pure Scientific) Research. Experimental and theoretical work undertaken primarily to acquire new knowledge without a specific application in view
- Applied Research. Original work undertaken in order to acquire new knowledge with a specific application in view.
- Development/Evaluation Research or Operations Research. Creates and assesses products (vaccines, drugs, diagnostics, prostheses or equipment), interventions (public or personal health services) and instruments of policy that improve on existing options
- Clinical Research. Research involving clinical patients or tissues samples from patients. It is undertaken to find better ways of identifying and caring for people in ill health.
- Public Health Research. Research involving communities or populations, typically outside health care institutions. It is undertaken to identify the factors which contribute to ill-health in populations and ways of influencing these factors to prevent disease. It includes epidemiology, social and behavioural sciences, health services research on population - based health interventions

The majority of the research activities have been funded by grants from the Government of Ghana, JICA, DANIDA, WHO, National Institutes for Health (NIH), WHO/TDR, Family Health International (FHI), European Union, Ghana AIDS Commission, IMMPACT - University of

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<sup>2</sup> Based on definitions from "The Virtuous Cycle: Working together for health and medical research", as cited in the Health and Medical Research Strategic Review Website.

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.

## **7. NMIMR POSITION IN GHANA'S HEALTH SECTOR**

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).

For the past 4 years, the Institute has provided the technical backstop and clinical/laboratory arm of the 3 major disease control programmes, namely:

- i. National Tuberculosis Programme;
- ii. National HIV/AIDS and STI Programme;
- iii. National Measles Programme under the Integrated Surveillance Diseases Program

The Institute also houses the West African Centre for International Parasite Control (WACIPAC) in 2004 The main objective of WACIPAC is to build human capacity in parasite control in West Africa. For this purpose, WACIPAC has the following tasks:

- a) Organizing international and in-country trainings and workshops for policy makers, programme managers and frontline officers. (Human Resource Development)
- b) Developing the guideline for school-based integrated parasite control programme through a model project site in Dangme East district, Ghana
- c) Building information network for parasite control among participating countries, Development Partners and other Centres
- d) Advocating and promoting the GPCI to reduce parasitic disease burden in West Africa
- e) Supporting member countries to implement Start-up programmes





## REFERENCES:

1. Ghana Health Service. National Tuberculosis Control Programme.
2. \_\_\_\_\_. HIV/AIDS in Ghana. Current Situation, Projections, Impacts, and Interventions
3. Health and Medical Research Strategic Review Website. "The Virtuous Cycle: Working Together For Health And Medical Research". 1999
4. NMIMR. Establishment List. February 2007
5. \_\_\_\_\_. List of Publications: 2003, 2004, 2005, 2006
6. \_\_\_\_\_. Medium-Term Expenditure Framework: 2005, 2006, 2007 Budget
7. \_\_\_\_\_. Silver Jubilee Brochure: 1979-2004. 2005
8. \_\_\_\_\_. Website
9. University of Legon. Annual Report: Years 2004, 2005, and 2006. Accra.

## LIST OF PERSONS INTERVIEWED

1. Prof. Alexander Nyarko, Director, NMIMR
2. Prof. Michael Wilson, Deputy Director, NMIMR
3. Mr. Okyere Boateng, Assistant Registrar, NMIMR
4. Dr. Kwasi Addo, Head, Bacteriology Unit, NMIMR
5. Dr. Phyllis Addo, Head, Animal Experimentation, NMIMR
6. Dr. K.M Bosompem, Head, Parasitology Unit
7. Dr. Benjamin Gyan, Research Fellow, Immunology Unit
8. Dr. Frank Bonsu, Programme Manager, NTP
9. Dr. G. Amofa, Director, Public Health Division, MOH
10. Dr. John Gyapong, Head, Health Research Unit, GHS
11. Dr. Nii Akwei Addo, Programme Manager, NACP
12. Prof. Sakyi-Awuku Amoa, Director-General, GAC
13. Dr. Kofi Ahmed, Chief Medical Officer, MOH
14. Ms. Veronica Bekoe, Head, PHRL
15. Dr. Harry Opata, Programme Officer, Communicable Diseases Prevention and Control, WHO
16. Dr. Victor Ankrah , Project Officer, Health, UNICEF
17. Dr. Justice Hoffmann, District Health Director, Dangme East
18. Ms. Dortehea Waecker, Governance Advisor, European Union



Third Party Review by an External Expert  
 Concerning the Ex-Post Evaluation on the Infectious Disease Project  
 at Noguchi Memorial Institute for Medical Research in Ghana

Rating :	A: "excellent"
	B: "good"
	C: "acceptable"
	D: "unacceptable"

### 1 Evaluation Framework

(1) Time Frame of Evaluation Study	Rating
[Viewpoint] Necessary field survey activities such as data collection and discussion with counterparts are appropriately set within the time frame of the evaluation study. Time frame contains timing, length and schedule of the evaluation study.	B
(2) Study Team	Rating
[Viewpoint] Team members are assigned on an impartial basis, and are with balanced specialty.	B
Comment: Consultant noted difficulty of time frame for the study due to limited communication and planning (see page 7 under Limitations)	

### 2 Data Collection and Analysis

(1) Evaluation Questions	Rating
[Viewpoint] Evaluation questions are in line with evaluation purposes and set properly in the evaluation grid. General questions as to the five evaluation criteria are narrowed down to more specific sub questions to identify necessary information/data to be collected.	B
(2) Data Collection	Rating
[Viewpoint] Data collection is conducted based on the evaluation grid, and is sufficient for obtaining answers for evaluation questions. Additional information are collected for unexpected and newly confronted questions during the process.	B
(3) Measurement of Results	Rating
[Viewpoint] Achievement level of overall goal is examined on the basis of appropriate indicators, being compared with targets.	B
(4) Examination of Causal Relationship	Rating
[Viewpoint] The causal relationships whether the effects for the beneficiaries resulted from the project is examined either in a qualitative or quantitative manner (i.e. Are the effects at the overall goal level caused by the project intervention?)	C
Comment: The information obtained from the review and interviews alone will not be enough to establish the causal relationship of whether the effects for the beneficiaries resulted from the project.	

### 3 Evaluation Results

(1) Impact	Rating
[Viewpoint] Perspectives for evaluation of 'Impact' ( e.g. achievement level of the overall goal, causal relationships between the outcome of the project and overall goal, ripple effects) are substantially covered. Grounds for judgment are clearly stated in a convincing manner.	B
(2) Sustainability	Rating
[Viewpoint] Perspective for evaluation of 'Sustainability' (e.g. probability of activities to be continued and outcomes to be produced in terms of 1)policies and systems, 2) organizational and financial aspects, 3) technical aspects, 4) Society, Culture and environment) are substantially covered. Grounds for judgment are clearly stated in a convincing manner.	B
(3) Factors Promoting Sustainability and Impact	Rating
[Viewpoint] Promoting factors on 'Impact' and 'Sustainability' are analyzed properly based on the information obtained through evaluation process.	B
(4) Factors Inhibiting Sustainability and Impact	Rating
[Viewpoint] Inhibiting factors on 'Impact' and 'Sustainability' are analyzed properly based on the information obtained through evaluation process.	B
(5) Recommendations	Rating
[Viewpoint] Recommendations are made thoroughly based on the information obtained through the process of data analysis and interpretation. Recommendations are specific and useful for feedbacks and follow-ups, preferably being prioritized with a time frame.	B
(6) Lessons Learned	Rating
[Viewpoint] Lessons learned are derived thoroughly based on the information obtained through the process of data analysis and interpretation. Lessons learned are convincing and useful for feedbacks, being generalized for wider applicability.	B
<p>Comment:</p> <p>The sustainability of project has clearly been discussed.</p>	

### 4 Structure of Report

(1) Writing Manner	Rating
[Viewpoint] Logical structure and major points are clearly described in an easily understandable manner.	B
(2) Presentation of Primary Data and Utilization of Figures	Rating
[Viewpoint] Sufficient primary data such as on the target, contents and results of interviews and questionnaires are presented properly in the report. Figures and tables are utilized effectively to present statistics and analysis results.	B
<p>Comment:</p> <p>The reports have logical structures and highlights the main points properly.</p>	

## 5 Overall Review based on 'Criteria for Good Evaluation'

(1) Usefulness	Rating
[Viewpoint] In light of the effective feedback to the decision-making of the organization, clear and useful evaluation results are obtained.	B
(2) Impartiality and Independence	Rating
[Viewpoint] Evaluation is impartially conducted in a neutral setting	B
(3) Credibility	Rating
[Viewpoint] In light of the specialties of evaluators, transparency of the evaluation process and appropriateness of the criterion of judgment, evaluation information are credible.	B
(4) Participation of Partner Countries	Rating
[Viewpoint] Partner countries' stakeholders participate actively in the process of evaluation, not just provide information.	A
<p>Comment:</p> <p>Participation in the Ex-post Evaluation Study Workshop was good, open and frank. The workshop formed a good forum for validation of the study findings and source for clarification of issues and other additional information</p>	

## 6. Overall Comment

The Final Evaluation Report and Final Review Report are good and provide an overview of NMIMR in terms of policy, research agenda, funding and its sustainability.

Date: 27<sup>th</sup> March 2007

Name of the Third Party: Dr Moses Aikins

Designation: Consultant

Name of the Institution:

Managing Consultant. JSA Consultants Ltd., Accra.



**Overall Comments of Third Party Review by an External Expert on the Ex-Post Evaluation on the Infectious Disease Project at Noguchi Memorial Institute for Medical Research in Ghana**

The evaluation undertaken by the appointed consultant (Marian Tadeffa-Kubabom) is good and conforms to the Project Design Matrix of Terminal Evaluation and the Evaluation Grid. The finalized reports considered the suggestions and comments made on draft reports and further discussion held with the Consultant to clarify issues made on the draft reports.

As an External Third Party Reviewer, I am satisfied with the outcome of the final reports, namely the Evaluation and Review Reports of the above-named project.

Date: Tuesday, March 27, 2007 .....

Name of the Third Party: Dr Moses Aikins

Designation: Managing Consultant

Name of the Institution: JSA Consultants Ltd., Accra. ....

