KENYA MEDICAL RESEARCH INSTITUTE

ANNUAL REPORT AND STATEMENT OF ACCOUNTS

2002-2003

KENYA MEDICAL RESEARCH INSTITUTE
KEMRI

In Search of Better Health

COLLABORATION AND PARTNERSHIPS

In line with its mandate, KEMRI has developed very useful linkages with local, regional and international institutions and organizations that are involved in health research.

LOCAL COLLABORATORS

Ministry of Health
Ministry of Education, Science and Technology
Other Government of Kenya Ministries
National and locally based International Research and Development Institutions and Organizations
Kenyatta National Hospital and other main hospitals
National Universities and tertiary institutions
Pharmaceutical companies

REGIONAL COLLABORATORS

1. Blair Institute - Zimbabwe
2. Commonwealth Regional Health Secretariat for East, Central and Southern Africa, Arusha, Tanzania
3. Ethiopian Health and Nutrition Research, Addis Ababa, Ethiopia
4. National Institute of Medical Research (NIMR), Dar-es-Salaam, Tanzania
5. Noguchi Memorial Institute for Medical Research, Legon, Ghana
6. Medical Research Council, South Africa
7. Makerere University Medical School, Kampala, Uganda
8. Suez Canal University, Ismailia, Egypt
9. Virus Research Institute, Entebbe, Uganda
10. Zambia Medical School, Lusaka, Zambia

INTERNATIONAL COLLABORATORS

AUSTRALIA
11. Bios Initiative

AUSTRIA
12. International Atomic Energy Agency (IAEA)

BRAZIL
13. Oswaldo Cruz Foundation, Brazil

CANADA
14. Lawson Health Research Institute, London, Ontario, Canada

GERMANY
15. Institute of Virological Research, Germany

INDIA
16. Indian Council of Medical Research

JAPAN
17. Japan International Cooperation Agency, (JICA)
Kanazawa University
Nagasaki University

NETHERLANDS
18. Royal Tropical Institute of Amsterdam, Netherlands

SWITZERLAND
19. Medicines Sans Frontiers International

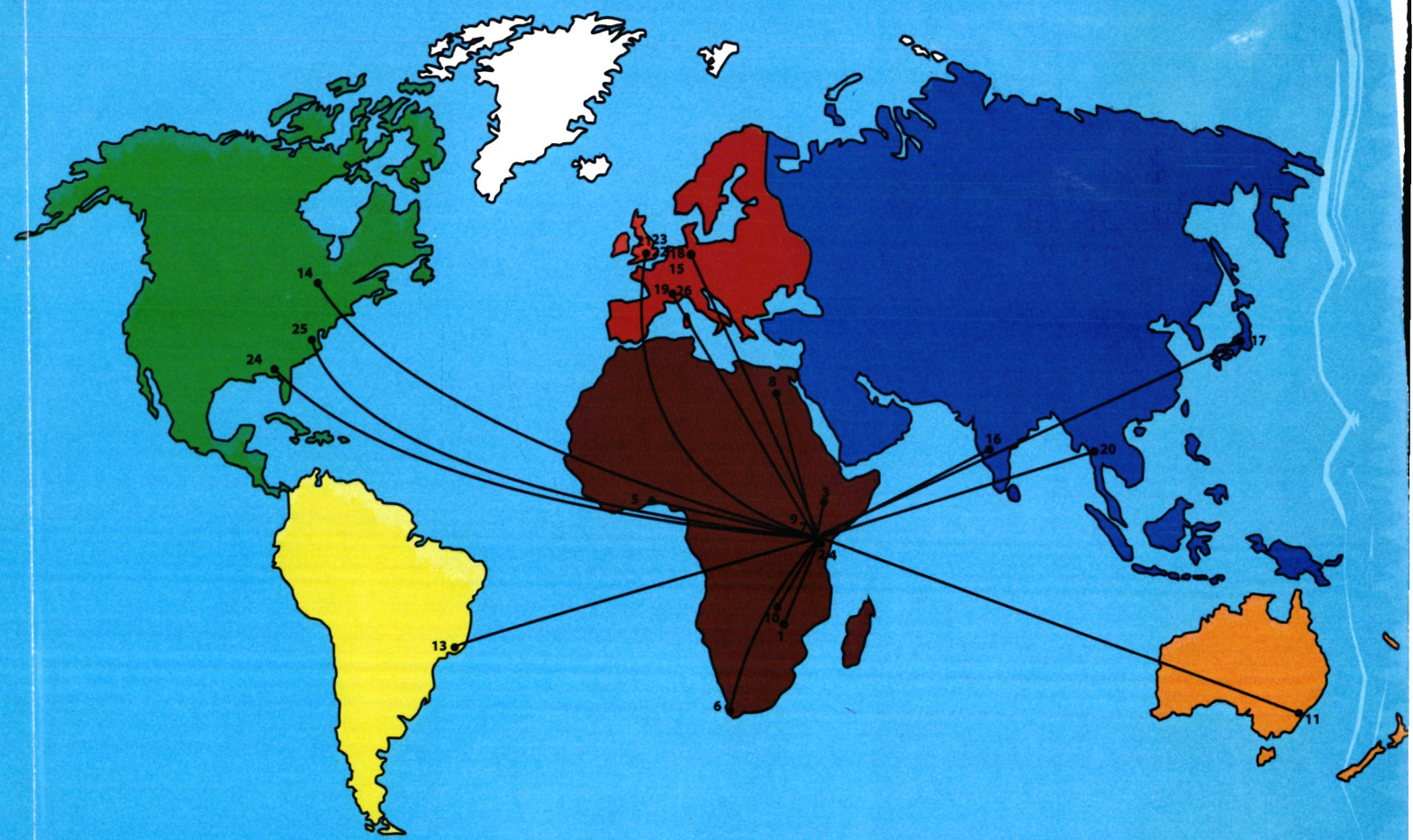
THAILAND
20. Mahidol University, Bangkok, Thailand

UNITED KINGDOM
21. Liverpool School of Tropical Medicine
22. London School of Hygiene and Tropical Medicine
23. Wellcome Trust (UK)

UNITED STATES OF AMERICA
24. Centres for Disease Control and Prevention, Atlanta, Georgia, (USA)
25. Walter Reed Army Institute of Research, Washington, (USA)

UNITED NATIONS AGENCIES
26. World Health Organization,

Kenya Medical Research Institute Regional and International Collaboration and Networks



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Kenya Medical Research Institute
P.O Box 54840
00200 - CITY SQUARE
NAIROBI

Tel: +254(020) 2722541
Fax: +254 (020) 2720030
E-Mail: kemri-hq@kemri.org
Website: www.kemri.org

CHAIRMAN'S FOREWORD

Dr. Mohamed S. Abdullah

The Hon. Minister for Health
Ministry of Health
P.O. Box 30016 - 00100
NAIROBI

Dear Madam,

It is my humble duty to submit to you on behalf of the Board of Management of the Kenya Medical Research Institute, the Annual Report and Statement of Accounts for the 2002/2003 financial year in accordance with the provisions of Section 20 of the Science and Technology (Amendment) Act of 1979 (Cap 250 of the Laws of Kenya).

The Board is grateful to the Government of Kenya and also to foreign governments and organizations that have continued to lend us support in our research endeavors. Through collaborative arrangements, the Institute was able to attract KShs.621,484,223 in direct research support while the Government contributed KShs.544,923,424.

As we conclude our term of office we can look back over several remarkable years in the history of KEMRI. These years witnessed unprecedented changes in our country's health policies, wherein new visions were developed regarding the place and role of Science and Technology in health delivery service. In light of these changes, KEMRI redefined its research priorities into four core programmatic areas. These include Infectious Diseases, Parasitic Diseases, Epidemiology Public Health and Health Systems, and Biotechnology and Non-Communicable Diseases. In addition KEMRI opened new frontiers by venturing into blood safety diagnostic kits that are now successfully in use countrywide.

My Board is also grateful to Dr. Davy Koech, Director KEMRI for his exemplary leadership and to the staff of the Institute for their extraordinary dedication and selflessness in the serving the Institute.

I remain,

Yours faithfully,

MOHAMED S. ABDULLAH, M Med, MBS

DIRECTOR'S STATEMENT

Dr. Davy K. Koech

During the year ended 30th June 2003, the Institute continued to strengthen its research development capacity, through formulation and implementation of relevant research protocols, technology, development and improvement in institutional research infrastructure.

In the year, over 80 new research protocols were developed in areas of infectious and parasitic diseases, public health and non-communicable diseases. The results from these protocols are routinely communicated to the Ministry of Health for application in improvement of our national health care capacity.

The Institute continues to publish the African Journal of Health Sciences, in addition to providing leadership in the organization of the African Health Science Congress. A record of 75 KEMRI scientists attended the 23rd Congress held in Kampala, Uganda where 86 abstracts from the Institute were presented. In addition scientists from the Institute published over 93 papers in respected health journals worldwide.

The Institute was also active in human resource development in the year, during which six officers successfully completed their PhD training, while 10 others completed their Masters degree studies. Several other officers successfully completed various other professional training programmes.

We have continued to produce and supply to the Ministry of Health and other health institutions, Hepcell kits for screening of blood for Viral Hepatitis, while arrangements for supplying the Ministry with the PA kit for screening blood for HIV are at an advanced stage.

Further we are following up on several plant-based agents for management of AIDS and various opportunistic infections in addition to developing various technologies for detection of resistance of malaria parasites to drugs.

In the year, the Graduate Programme of the Institute of Tropical Medicine and Infectious Diseases (ITROMID) admitted the first batch of 14 MSc and 10 PhD students. At the same time, the Eastern and Southern Africa Centre of International Parasite Control (ESACIPAC) commenced operations.

Through collaborative arrangements with JICA, the Institute undertook the renovation of the P3 Biosafety laboratory at a cost of Ksh. 15 Million. During the same period the Institute and the Walter Reed Army Research Unit commenced construction of the Paediatric Wards, Clinical and Laboratory facilities at Kericho District Hospital and at the New Nyanza General Hospital Kisumu.

KEMRI received a number of distinguished awards and international recognitions. At the Kenya Institute of Management (KIM) sponsored Company of the year (COYA) ceremony, the Institute was nominated and received an award for Best Overall Parastatal, as well as Creativity and Innovation Management and Environmental Management in the Service Sector.

We were also honoured to host a number of dignitaries, who included, the Hon. Tommy Thompson, U.S. Secretary for Health and Human Sciences, Dr. Kenneth Kaunda, former President of Zambia who is also the founder of the Kenneth Kaunda Foundation, Dr. Peter Eriki, WHO Country Representative in Kenya, and H.E. Gary Quince, Head of Delegation of the European Union in Kenya.

These visits have been a blessing to the Institute as they have served to not only encourage, but also direct our vision: ***to improve the quality of health and human life through research.***

I wish to thank the Government of Kenya through the Ministry of Health for continuing to provide the resources and enabling environment to conduct research.

I equally wish, to appreciate the contribution of our Board of Management whose Chairman, Dr. Mohamed S. Abdullah, I remain personally grateful to, for his very able stewardship, wise counsel and inspiring guidance in steering the affairs of the Institute.

None of the above achievements would have been possible without the continued commitment and dedication of our collaborators and staff. I wish to record my most profound gratitude to them all as we aspire to greater achievements in the future.

DAVY K. KOECH, PhD, DSc, SS, OGW, MBS
DIRECTOR, KEMRI

Former Zambian President, Dr. Kenneth Kaunda, is briefed by a KEMRI scientist, Dr. Solomon Mpoke, on the use of the PA Kit developed by KEMRI for diagnosis of HIV.

Hon. Tommy Thompson, US Secretary for Health and Human Sciences, signs a visitors book, during the official inauguration of the KEMRI/CDC Administration and Laboratory building in Kisumu.

Mr.Takao Kawakami the President of Japan International Cooperation Agency (JICA), signs the visitors book during his visit to KEMRI.

Newly appointed Permanent Secretary, Ministry of Health, Wellington Godo being introduced to KEMRI senior staff by Director, KEMRI, Dr. Davy Koech, when he visited the institute.

BACKGROUND

The Kenya Medical Research Institute (KEMRI) is a state corporation established through the Science and Technology (Amendment) Act of 1979, as the national body responsible for carrying out health research in Kenya. Since it's inception, KEMRI has developed a critical mass of scientists and technical personnel, to enable it to mount a competitive research endeavour to rank as one of the leading centres of excellence in health research both in Africa as well as globally.

MISSION

"To improve on the quality of health and human life through research."

VISION

"To be a leading centre of excellence in the promotion of quality health."

MOTTO

"In Search of Better Health"

MANDATES

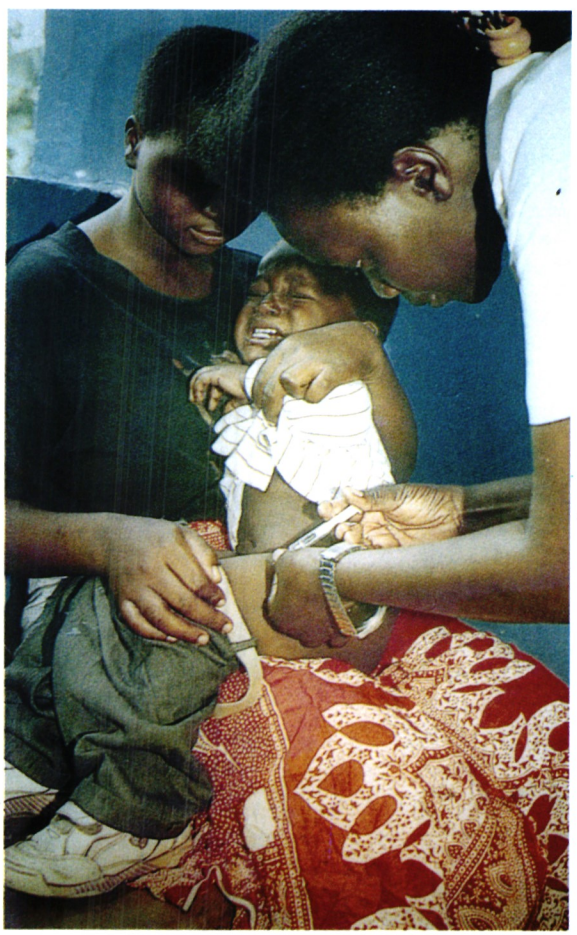
- To conduct research in human health.
- To cooperate with other organizations and institutions of higher learning in training programmes and on matters of relevant research.
- To liaise with other relevant bodies within and outside Kenya carrying out research and related activities.
- To disseminate and translate research findings for evidence-based policy formulation and implementation.
- To cooperate with the Ministry of Health, the Ministry for the time being responsible for research, the National Council for Science and Technology (NCST) and the Medical Science Advisory Research Committee on matters pertaining to research policies and priorities.
- To do all such things as appear necessary, desirable or expedient to carry out its functions.

RESEARCH PROGRAMMES

The institute's research activities are classified into the following four main programmes:-

Infectious Diseases

This programme aims at the reduction of the disease burden due to infectious agents and in particular due to HIV/AIDS and related infections. It also emphasizes on research on opportunistic infections, tuberculosis, sexually transmitted infections, viral hepatitis, acute respiratory infections, and drugs development and management. The programme mainly focuses on epidemiology, immunology, molecular biology, virology, microbiology, prevention and control of infectious diseases.



KEMRI strives to improve on the quality of health and human life through research.

Parasitic Diseases

The programme ensures the reduction of disease burden due to parasitic infections and particularly due to malaria, schistosomiasis, leishmaniasis and intestinal parasites. The programme concentrates on the epidemiology, parasitology, immunology, molecular biology, pathophysiology, vector biology and control of parasitic diseases. In addition it focuses on drugs management and development of vaccines.

Epidemiology Public Health and Health Systems Research

The programme is mandated to define and investigate the incidences and prevalence of diseases and health issues of major public health importance and develop strategies for promotion of better health. Health systems research, public health education, applied human nutrition, maternal and child health, reproductive health and population studies, behavioural studies, environmental and occupational health fall under this programme.

Biotechnology and Non-Communicable Diseases

The focus of this programme is the development and promotion of modern biotechnological techniques in molecular biology for production of pharmaceuticals, biologicals and for other applications, for use in the promotion of health. The programme also focuses on non-communicable diseases including oncology, cardiovascular and renal diseases.

1. INFECTIOUS DISEASES

A. KEMRI HIV/AIDS RESEARCH PROGRAMMES

Almost two decades after the first AIDS case was described in Kenya, HIV/AIDS still remains the biggest social, economic and development challenge. This worrying trend caused the Government, together with NGOs and Development Partners to launch a multi-sectoral intervention which is already showing

some positive signs, resulting in the decline of HIV infection rates in several sites in the country. This decline, is more marked in the age group 15-24 years. KEMRI on its part has demonstrated sustained effort in conducting research on HIV/AIDS prevention, control and management of opportunistic infections including the development of clinical drug trials.

i) KEMRI Facing the Challenges of HIV/AIDS through Research on Traditional Medicines

KEMRI has recognized and acknowledged the role that traditional medicine can play in complimenting and contributing to the fight against HIV/AIDS.

Research at KEMRI has demonstrated that most of the plants being used by traditional healers have medicinal properties. Research done on *Herpes simplex* virus types one and two (HSV I & II) which causes major opportunistic infections in HIV/AIDS patients for example, has shown that *Acacia mellifera* can be exploited for the management of these infections.

The realisation that locally available herbs with least or no known side effects can safely be used to treat a number of ailments, including secondary infections associated with HIV/AIDS , is a positive challenge that requires further scientific research. The institute, therefore, continues to work closely with traditional healers in tapping the potential of traditional medicine through institutionalization, research and development. KEMRI also works closely with other stakeholders in addressing regulatory mechanisms for traditional medicine.

A KEMRI scientist in the field collecting potential medicinal plants.

ii) Production and Evaluation of KEMRI Diagnostic Kits Strengthened

Technology for the production of the KEMRI's HIV Particle Agglutination, PA Kit and Hepcell Kit continues to be strengthened through staff training. During the year five staff members received advanced training on techniques used in the production of the kits. A comprehensive programme for conducting continuous evaluation of the test kits, has been drawn, in partnership with laboratories based in countries in the region, who routinely participate in the Third Country Training Programme (TCTP). In addition, the quality control and assurance (QC/A) scheme for the kits has been strengthened through advice and training by visiting JICA experts.

A KEMRI scientist working in a P3 Biosafety laboratory.

iii) Third Country Training Programme (TCTP)

The Government of Kenya, through KEMRI and the Government of Japan, through JICA are responding to the need for specialized training in the planning and running of programmes on blood safety screening, by organizing a course under the Third Country Training Programme. This training also helps the institute to communicate its expertise, ideas and perspectives to a larger audience.

The Third Country Training Programme has been held annually in KEMRI since the year 2000 with participants drawn from Kenya and selected countries in the region. The teaching methodology is not limited to traditional lecturing, but also emphasises on practical work, where-upon participants are exposed to hands-

on experience on current laboratory techniques in screening and diagnosis of HIV and viral hepatitis, amongst other blood borne viruses.

B. TUBERCULOSIS

i) Studies Show HIV Affects TB Diagnosis in Kenya

KEMRI's research activities on TB have been directed towards limiting transmission and promoting treatment. In collaboration with Wellcome Trust, the Institute has carried out studies to ascertain how HIV affects the epidemiology, presentation and diagnosis of TB in Kenya.

Preliminary studies into the level of resistance of the bacterium to commonly - used drugs such as isoniazid, streptomycin and rifampicin have been conducted. The strains of drug resistant TB have rendered treatment difficult, costly and often ineffective. A PCR-based technique for diagnosis of TB is currently being investigated at the Centre for Respiratory Diseases Research (CRDR).

C. ACUTE RESPIRATORY INFECTIONS (ARIs)

i) Epidemiology and Treatment of ARIs

Acute Respiratory Infections (ARIs) are defined as infections in any area of the respiratory tract, including the nose, middle ear, throat, windpipe and lungs. Primarily, pneumonia is the most serious of the ARIs, and is a leading cause of morbidity and mortality among children below 5 years.

Epidemiological studies on 1,600 children recruited in a study in Nairobi have determined the prevalence and risk factors for ARIs. The preliminary results have incriminated ARIs for 50% of childhood deaths, in cases where most children have four to six infections each year. The study revealed that children in urban areas experience higher frequencies of ARIs, than those in the rural areas. Studies conducted by scientists in the institute have also identified the emergence of bronchial asthma as a public health problem in Kenya, with the condition being more prevalent in urban areas. Ongoing research in parts of Western Kenya, is looking at the interaction between ARIs and malaria, with specific focus on the best methods of discriminating between the two infections, while bearing in mind that the symptoms of the two often mimic each other.

2. PARASITIC DISEASES

A. MALARIA

KEMRI's focus on malaria research has been on the development of innovative approaches that combine both preventive and curative strategies.

Some Facts About Malaria:

- Malaria occurs in the tropical and sub-tropical regions of the world.
- The disease is present in over 100 countries threatening 40% of the world's population.
- Malaria kills between 1 and 2 million people every year with the most vulnerable being children under 5 years of age, pregnant women, displaced persons and refugees.
- Sickness from malaria accounts for 30-50% of hospital admissions in areas where the disease is endemic.
- Ministry of Health statistics indicate that, 30 percent of illnesses in Kenya are due to malaria.
- In many African countries, including Kenya, resistance to chloroquine and sulphadoxine-pyrimethamine (SP) is so high that both drugs are no longer useful in the treatment of malaria.

i) Combination Drug Treatment for Malaria

Scientists in KEMRI have been working on effective treatment for malaria using the Chinese plant Artemesia annua. The studies have shown that Artemisinin-based combination therapy (ACT) is a reliable and

effective treatment for chloroquine resistant falciparum malaria.

KEMRI is also involved in the development and introduction of new molecular techniques for monitoring efficacy of antimalarial treatment and evolution of drug resistance.

Research done by KEMRI in this area has played a major role in influencing the current policy guidelines adapted by the MOH for effective 1st and 2nd line treatment for malaria. The Institute works closely with other organizations in the region, especially the East African Network for Monitoring Anti-malarial Therapy (EANMAT).

ii) KEMRI Continues to Advocate for the use of Insecticide Treated Nets (ITNs)

Through innovative research, KEMRI continues to advocate for the use of Insecticide Treated Nets (ITNs) for malaria prevention, especially for children and pregnant women in endemic areas. Results of a multidisciplinary trial by researchers from KEMRI and the Centres for Disease Control and Prevention (CDC) in parts of western Kenya, have shown that insecticide-treated mosquito nets, provide strong scientific support for international efforts to use the nets to reduce the burden of malaria in endemic areas. The formal publication of the results of the study were launched in the year 2003 and are documented in a series of 23 papers in peer review journals.

iii) Predicting Seasonality of Clinical Malaria

KEMRI's Centre for Geographic Medicine Research in Kilifi and Centre for Vector Biology and Control Research in Kisumu, have developed technologies for predicting the seasonality of clinical malaria using remote sensing technology. Images from satellite sensors are enabling predictions on the incidence and prevalence of malaria. This information has helped clinical and epidemiological implications for malaria control.

iv) Collaboration in Malaria Vaccine Research - A Formidable Challenge

As part of a global effort to develop a vaccine to protect children against malaria, the Kenya Medical Research Institute (KEMRI) and The Walter Reed Army Institute of Research (WRAIR) are jointly conducting a Phase 1 paediatric clinical trial of a malaria vaccine candidate in Kenya. The Malaria Vaccine Initiative (MVI) provides funding and technical support, with Glaxo-SmithKline Biologicals (GSK Biologicals) providing a component of the vaccine and monitoring support for the study. The U.S. Agency for International Development (USAID) supported the vaccine's development and production and currently supports the epidemiological study.

Staff of the KEMRI Centre for Vector Biology and Control Research (CVBCR) distributing Insecticide Treated Nets (ITNs) to the community in Kisumu.

"To make long-lasting progress against malaria, we need a vaccine for the region where malaria does its greatest damage to AFRICAN children and we have to focus on the population that is most at risk of dying from this disease - CHILDREN."

Dr. Melinda Moree, MVI Director

"One reason the partners selected Kenya is because this is where people, particularly children, are very likely to be SERIOUSLY HARMED by malaria. But they also are here because we have a STRONG CLINICAL RESEARCH programme in KEMRI."

Dr. Monique Wasunna, Head, CCR, KEMRI

B. THE ESTABLISHMENT OF EASTERN AND SOUTHERN AFRICA CENTRE OF INTERNATIONAL PARASITE CONTROL (ESACIPAC) SECRETARIAT AT KEMRI

In 1997, at the G8 Heads Summit Meeting in Denver, Colorado, USA, Mr. Ryutaro Hashimoto, the then Prime Minister of Japan, stressed the necessity of international cooperation to reduce the burden of parasitic diseases in developing nations. The Japanese Government devised a plan of action, which was proposed by Mr. Hashimoto at the 1998 Birmigham U.K. Summit. Consequently this proposal has been called the **"Hashimoto Initiative". ESACIPAC**, as a regional office based in KEMRI, was established under the Hashimoto Initiative , with the objective of conducting training and operational research in areas of parasite control in the region. The two other global centres are the Asian Centre for International Parasite Control (**ACIPAC**), Mahidol University, Bangok, Thailand and West African Centre for International Parasite Control (**WACIPAC**), Noguchi Memorial Institute of Medical Research, Legon, Ghana.

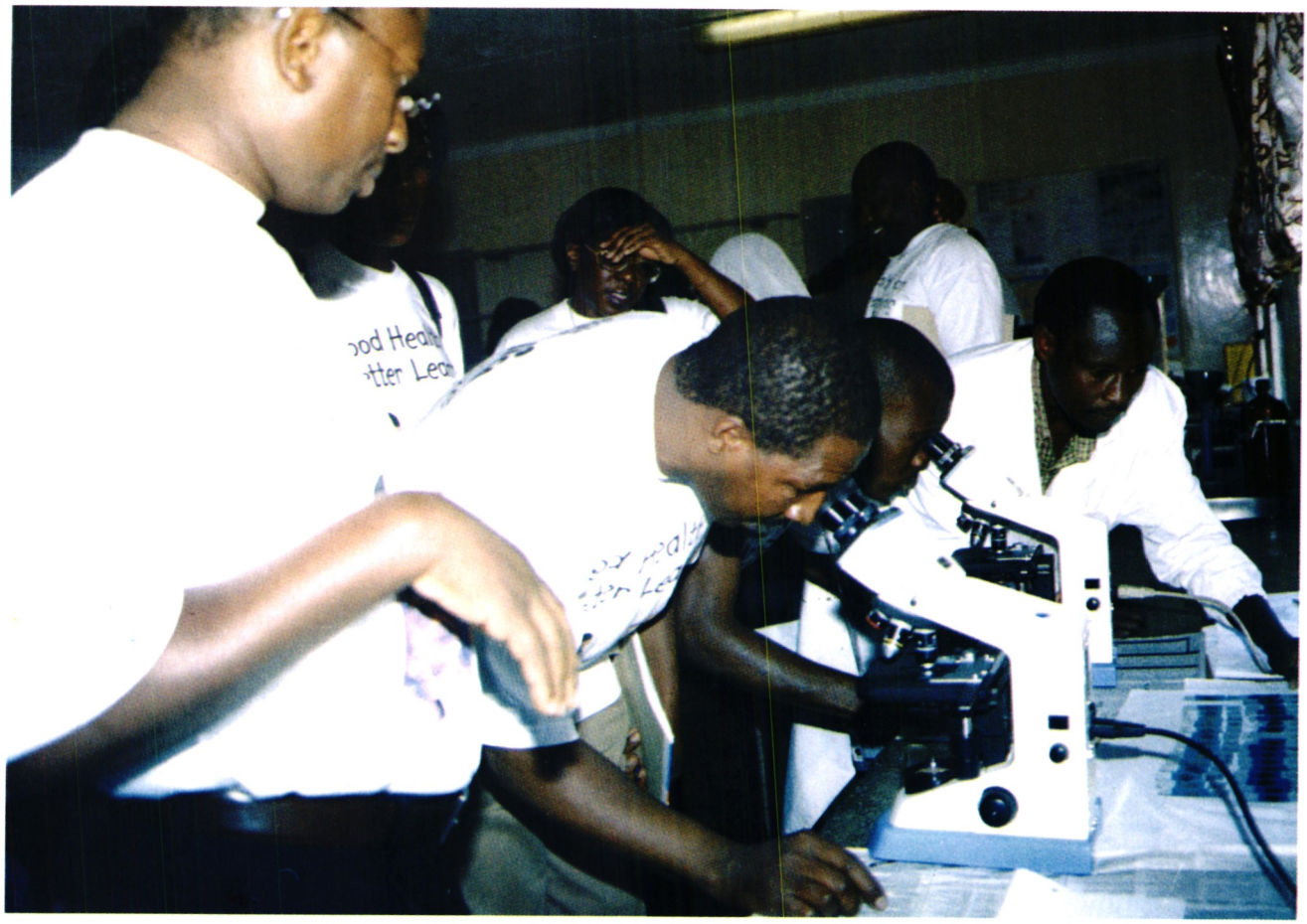
ESACIPAC hosts the International Symposium of Parasitic Diseases Control Programme 6-8 August, 2002.

The first major activity of ESACIPAC Secretariat was the hosting of the International Symposium on Parasitic Diseases Control Programme in Eastern and Southern Africa, between 6th and 8th August, 2002. JICA, WHO and KEMRI sponsored the event, with participants drawn from, Botswana, Tanzania/ Zanzibar, Uganda, Zambia, Zimbabwe and the host Kenya

Former Prime Minister of Japan, H.E. Ryutaro Hashimoto, signing the visitors' book when he visited the Institute.

"3.5 billion people are affected by soil-transmitted nematodes in the world....
We should make use of such know-how in Japan for the benefit of the rest of the world, especially for the developing nations...."

- Dr. Ryutaro Hashimoto, March 2000.



Participants of the ESACIPAC training programme.

SYMPOSIUM RECOMMENDATIONS

- ESACIPAC as one of the Hashimoto Initiative Centres, to contribute to human resource development at various levels, critical to parasite control programmes.
- South to South cooperation among the Hashimoto Initiative Centres, as well as the neighbouring countries will be promoted.
- ESACIPAC to strengthen activities for parasite control in Eastern and Southern Africa countries with a view to reducing poverty.
- Human and information network systems related to parasite control to be established in Eastern and Southern Africa.
- School health programmes are recognised as useful methods for parasite control.
- The possibility that school - based programmes can be expanded to the community – based activities, including prevention of HIV/AIDS.
- Cooperation between Ministries of Health and Education and the private sector to be promoted.
- Request for support from developed countries as well as international organizations, to accomplish the goal of parasite control.

C. LEISHMANIASIS

The group of diseases caused by Leishmania parasites are transmitted by the bite of sandflies, genus *Phlebotomus*. In humans the disease occurs in four forms; life-threatening visceral leishmaniasis (VL), commonly known as Kala-azar; mutilating mucosal leishmaniasis, self-healing cutaneous leishmaniasis, and post Kala-azar dermal leishmaniasis (PKDL).

i) Leishmaniasis Treatment Poses a Great Challenge

Although newer treatments exist for leishmaniasis, they are not optimal due to problems of toxicity, high price and difficulty in administration. Co-infection with HIV/AIDS also poses an additional challenge.

Despite considerable toxicity and the need for hospitalisation for at least 4 weeks, the antimonial, sodium stibogluconate (SSG) is the first line treatment for kala azar in most endemic areas including Kenya. In African countries where generic SSG is not available, the majority of people with Kala-azar do not have access to treatment. In addition, the spread of drug resistance is threatening to render antimony treatment ineffective.

Given the problems of toxicity, need for hospitalisation, growing drug resistance, and high costs associated with the currently available drugs for leishmaniasis, it is clear that patients urgently need new and improved treatments to replace or compliment these drugs.

ii) Sitamaquine Study

The Centre for Clinical Research (CCR) has concluded phase 1 and II clinical trials of an oral anti-leishmania drug, Sitamaquine, for the management of visceral leishmaniasis (Kala-azar). The phase I and II of the study conducted in Baringo were successfully completed and in phase 111, Sitamaquine is being investigated for oral treatment of visceral leishmaniasis on HIV negative patients. This phase will also seek to compare Sitamaquine with Pentostam, which is currently the standard treatment for Kala-azar in Kenya.

Visceral Leishmaniasis (Kala-azar) affects the soft internal organs such as the spleen, liver and lymph nodes. It is characterized by fever, weight loss, anaemia, swelling of the affected organs and depressed immune systems. Visceral leishmaniasis is often accompanied by other diseases like tuberculosis, pneumonia, diarrhoea and has a very high mortality rate if treatment is delayed.

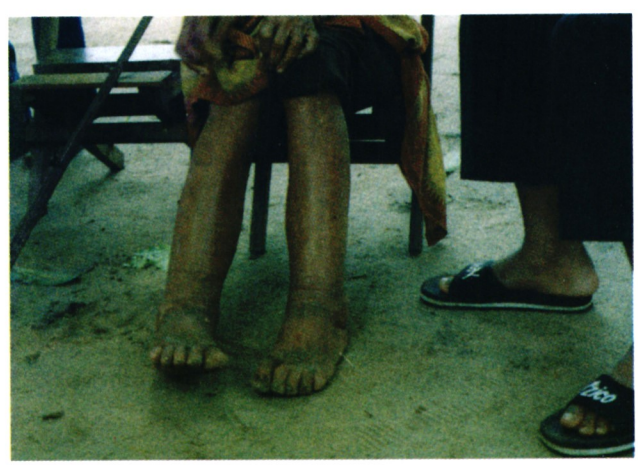
D. FILARIASIS

i) KEMRI Up-scales Research on Filariasis

KEMRI has played a very crucial role in the implementation of the Kenya National Programme for Elimination of Lymphatic Filariasis (NPELF), which is part of the Global Programme for Elimination of Lymphatic Filariasis (GPELF).

As a result of the launch of the NPELF, intensive research has been conducted on filariasis endemic districts in Coast Province, namely; Kwale, Kilifi, Malindi, Lamu, Tana River and Mombasa where a total of 700, 000 people are estimated to be infected. Wuchereria bancrofti is the only causative agent of lymphatic filariasis in Kenya.

KEMRI scientists in collaboration with other partners including the Division of Vector Borne Diseases



Manifestation of human filariasis on the legs.

(Ministry of Health), have conducted Mass Drug Administration (MDA) using Diethylcarbamazine (DEC) and Albendazole successfully in communities affected by the parasite.

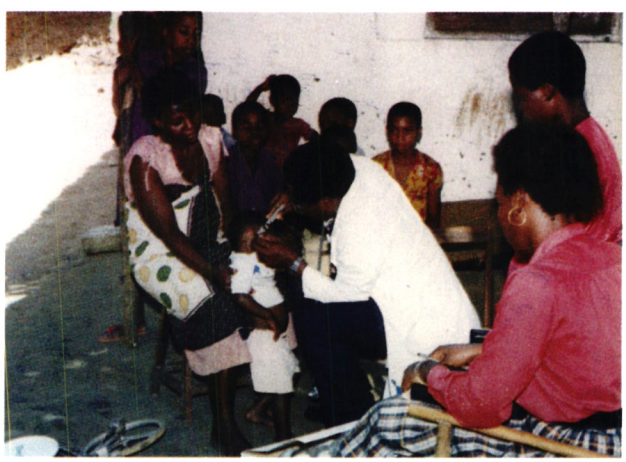
This drug delivery method, referred to as Community-Drug Treatment (ComDT) for Lymphatic Filariasis, has resulted in the reduction of microfilaria rates by 75% in most communities. This initiative has been hailed as an efficient method of increasing treatment coverage and partnerships between the community and the health workers. The drug study has shown that the community can, with minimum supervision by the health worker, achieve very high drug distribution and coverage.

3. EPIDEMIOLOGY PUBLIC HEALTH AND HEALTH SYSTEMS RESEARCH

i) Infections Could be Related to Nutrition

The programme aims at studying the epidemiology of nutritional disorders with focus on developing and applying appropriate preventive and control methods. The Centre for Public Health Research has been conducting controlled studies on school age children, pregnant mothers and infants. The findings from school age children indicate that in addition to control of parasitic diseases, nutritional supplementation is required to bring their nutrition status to normal. A National Survey on anaemia, vitamin A, iron and zinc, confirmed major deficiencies which are associated with parasitic disease infections and inadequate dietary intake. Some of the salient observations include the following:-

- Anaemia is a national public health problem in which reduced dietary intake of micronutrients constitutes the main background risk factor.
- There are considerable regional disparities in the prevalence of anaemia.
- These variations are partly attributed to malaria among pre-school age children and women, and hookworm and bilharzias among older children and adults.
- Vitamin A deficiency risk remains an important public health problem in Kenya.
- High risk of zinc deficiency is evident in about half of the sampled population.



Dr. Nobert Peshu, Head, Centre for Geographic Medicine Research - Coast examining a child in Kilifi.

4. BIOTECHNOLOGY AND NON-COMMUNICABLE DISEASES

i) Regional Strategies on Non-Communicable Diseases (NCDs)

KEMRI together with partners has joined the regional strategy addressing problems related to NCDs. The strategies are addressing oral health, nutrition, mental health, tobacco control, disability and injury prevention and rehabilitation.

Hypertension is being addressed as the most frequent and important risk factor for cardiovascular diseases. It has been revealed that complications of untreated hypertension include heart failure, chronic renal failure, stroke and coronary heart disease. The hypertension-related stroke rate in the Africa region is high and victims are generally relatively young.

Research on rheumatic heart disease has found that it occurs frequently, despite the availability of several potential cost-effective measures for preventing rheumatic fever. The disease continues into the second and third decades of life, leading to social problems and increased demand for health care.

Other approaches which KEMRI together with partners are recommending in the management of NCDs include:

- Standardardization of water supply.
- Waste treatment and disposal.
- Regulations on smoking and substance abuse.
- Quality regulations in food.
- Air pollution.
- Instituting an interactive information and education strategy on healthy lifestyle through schools, media and the work place.
- Sustained advocacy with institutional partners in all programmes.
- Promotion of regulations in research on NCDs.
- Promotion of human resource development.

KEMRI's CONTRIBUTION TO REGIONAL AND GLOBAL HEALTH

i) Director, KEMRI Elected to the Board of the Drugs for Neglected Diseases Initiative (DNDi)

Director KEMRI, Dr. Davy K. Koech was elected to the Board of the Drugs for Neglected Diseases Initiative (DNDi), a new not-for-profit drug research organization officially launched in 2003 in Geneva, Switzerland.

Dr. Koech joined the seven-member Board of the newly formed initiative that will harness cutting-edge science to develop drugs for diseases afflicting the world's poorest people. The neglected diseases include Leishmaniasis, Chagas disease, Trypanosomiasis (Sleeping sickness), Hydatidosis and Malaria among others.

Dr. Koech was also elected as one of the four signatories of the DNDi Charter, the body's top decision making organ. Leading health and research institutes from Brazil, France, India, Kenya and Malaysia joined WHO/TDR (Training on Tropical Diseases) and Médecins Sans Frontières to launch the Drugs for Neglected Diseases Initiative (DNDi). Dr. Koech and Dr. Monique Wasunna, Head, Centre for Clinical Research (CCR), KEMRI represented Kenya and Africa in Geneva during the launching ceremony.

The founding partners gave firm commitment of their instituitions support to DNDi. These partners include Indian Council of Medical Research, Institut Pasteur - France, Médecins Sans Frontières International - Switzerland, Ministry of Health - Malaysia, the Oswaldo Cruz Foundation - Brazil, Oxfam - Great Britain and BIOS Initiative - Australia. During the first African Collaboration Conference in Nairobi in May 2003 KEMRI was unanimously selected as a founding partner and host DNDi-Africa office.

DNDi plans to spend around US$250 million over 12 years to develop 6-7 drugs and a balanced portfolio to combat sleeping sickness, leishmaniasis and Chagas disease - three killer diseases that threaten a combined 350 million people every year.

- DNDi Newsletter

ii) African Forum for Health Science (AFHES)

KEMRI is a founding partner and host to the AFHES regional office. AFHES is a non-governmental and non-profit making organization that was formed to promote health sciences research through collaboration and provide a forum for dissemination of research findings in Africa. Director, KEMRI, Dr. Davy Koech is the founder and the President of AFHES, which publishes the African Journal of Health Sciences (AJHS) and organizes the African Health Sciences Congress (AHSC) every year.

iii) African Health Sciences Congress (AHSC)

African Health Sciences Congress (AHSC) is a premier scientific meeting organized each year by the AFHES. The first meeting was held in Nairobi in 1994 and this year it was held in Kampala, Uganda. The congress provides a forum for scientists from all over the world to meet and disseminate research findings. The congress is hosted among African countries on rotational basis.

iv) African Journal of Health Sciences (AJHS)

This publications arm of AFHES is responsible for the editing and production of the African Journal of Health Sciences (AJHS). This is a quarterly publication that also provides a forum for African scientists to publish their scientific results emanating from their research activities.

v) Institute of Tropical Medicine and Infectious Diseases (ITROMID) is Launched

The newly launched Institute of Tropical Medicine and Infectious Diseases (ITROMID) opened its doors to the first batch of 24 students in tropical medicine and infectious diseases in April, 2003. The disciplines offered include clinical & tropical medicine, microbiology, pharmaceutical sciences, molecular medicine, parasitology and entomology at both the Masters and PhD levels. The programme is a collaborative arrangement between Jomo Kenyatta University of Agriculture and Technology (JKUAT) and the Kenya Medical Research Institute (KEMRI), and the first intake comprised 14 Masters and 10 PhD students.

KEMRI HOSTS THE FOLLOWING REGIONAL AND GLOBAL HEALTH INITIATIVES

- WHO Initiative on Surveillance of Anti-Microbial Resistance .
- Emerging and Re-emerging Infections - Regional Headquarters.
- International Union against TB and Lung Diseases - Africa Headquarters.
- International Union against Cancers - Africa Headquarters.
- Global Initiative on Climate Change in Health - Africa Headquarters.
- African Drugs for Neglected Diseases Initiative (DNDi).

Dr. Davy Koech, Director, KEMRI and President of AFHES addressing participants at the 24th African Health Sciences Congress (AHSC) held in Addis Ababa, Ethiopia.

AWARDS OF EXCELLENCE

KEMRI Excels in COYA Awards

KEMRI participated in the prestigious Kenya Institute of Management (KIM) Company of the Year Awards (COYA) and scooped three accolades, in Creativity and Innovation Management (service sector), Environmental Management (service sector) and Best Overall State Parastatal awards.

KEMRI wins the Presidential Award

KEMRI team scooped the overall Corporate title during the 2003 Presidential Awards competitions held at the Carnivore grounds, Nairobi.

Although participating for the first time, the strong 20 - member team defeated a galaxy of over 10 corporate organizations and several colleges and high schools. The organizers commended KEMRI for effortlessly overcoming the many hurdles and obstacles crafted along the more than 15 Km road challenge. "The team not only showed dedication, but also endurance and unity which is sometimes very difficult to achieve from adults", remarked the organizers.

Later the team was invited to State House, Nairobi to witness the official presentation of Awards to primary and high school students by H.E. President Mwai Kibaki.

Traditionally, Presidential Award Competition challenge includes activities such as community service, skill development, physical recreation, teamwork, endurance training, management and leadership skills among other personal and social development activities.

KEMRI staff participating in team building games during the Presidential Award Competition held at Carnivore grounds, Nairobi.

CORPORATE SOCIAL RESPONSIBILITY

The Institute has a broad range of community-oriented services

- Clinical, laboratory, diagnostic services.
- Safe Waste Disposal Services.
- HIV/AIDS Education Awareness at the workplace.
- HIV /AIDS training modules for community and youth.
- Counselling and Promotion of Indigenous Best Practices in HIV/AIDS.

KEMRI staff prepare for the start of the Kenya Freedom From Hunger Walk at Uhuru Park, Nairobi. The Freedom from Hunger Walk was established with an objective of complimenting government's efforts in fight against hunger and malnutrition among the poor members of the society. The theme of the Walk was " Alliance Walk for Food Security."

Director, KEMRI Dr. Davy K. Koech planting a tree during the Institute's thanksgiving day.

STAFF PUBLICATIONS 2003

1. Alaii JA, Hawley WA, Kolczak MS, ter Kuile FO, Gimnig JE, Vulule JM, Odhacha A, Oloo AJ, Nahlen BL, Phillips-Howard PA. Factors affecting use of permethrin-treated bed nets during a randomized controlled trial in western Kenya. *Am J Trop Med Hyg*: 2003; **68** (4 Suppl):137-41.

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REPORT OF THE CONTROLLER AND AUDITOR GENERAL ON THE FINANCIAL STATEMENTS OF KENYA MEDICAL RESEARCH INSTITUTE FOR THE YEAR ENDED 30 JUNE, 2003

I have audited the financial statements of Kenya Medical Research Institute for the year ended 30 June, 2003 in accordance with the provisions of section 29 of the Exchequer and Audit Act (Cap 412). I have obtained all the information and explanations considered necessary for the purpose of the audit. Proper books of account have been kept by the Institute and the financial statements, which have been prepared under the historical cost convention, are in agreement therewith and comply with the Science and Technology Act. (Cap 250).

Respective Responsibilities of the Board and the Controller and Auditor General

The Board is responsible for the preparation of financial statements which give a true and fair view of the Institute's state of affairs and its operating results. My responsibility is to express an independent opinion on the financial statements based on my audit.

The fixed assets figure of Kshs.1,378,786,633 as at 30 June, 2003 excludes an unknown value of newly constructed buildings at the KEMRI Headquarters and at Kisumu Centre which were constructed by the Government of the United States of America. However, no agreement or records have been seen to confirm the nature of arrangements made between the Kenya Government/KEMRI and the United States Government. The contract documents for the construction of the buildings have also not been availed to enable the ascertainment of the contract details including the contract sums for each of the projects. In view of the foregoing the fixed assets balance sheet figure of Kshs.1,378,786,633 as at 30 June, 2003 is understated to the extent of the value of the buildings excluded from the financial statements.

Opinion

Except for the reservation set out in the foregoing paragraph in my opinion the financial statements when read together with the notes thereon present fairly the financial position of the Institute as at 30 June, 2003 and of its deficit and cash flows for the year then ended.

E. N. MWAI

CONTROLLER AND AUDITOR GENERAL

Nairobi

22 June 2005

KENYA MEDICAL RESEARCH INSTITUTE BALANCE SHEET AS AT 30TH JUNE 2003

	Page	Notes	2002/2003 (Kshs)	2001/2002 (Kshs)
Assets Employed				
Fixed Assets	31	1&2	**1,378,786,633**	**1,376,195,383**
Current Assets:				
Debtors		3	120,781,927	120,994,099
Centres Imprest			61,320	129,161
Temporary Imprest			221,311	168,124
Unexpended Balance on Special Accounts & Grants	34	4	93,483,775	12,370,785
Cash & Bank Balance		5	8,843,739	37,814,906
Total Current Assets			**223,392,072**	**261,477,075**
Less:				
Current Liabilities				
Creditors			1,102,287	6,634,104
Deposits, Special Accounts & Grants	34	4	93,483,775	102,370,785
Total current Liabilities			**94,586,062**	**109,004,889**
Net current Assets			**128,806,010**	**152,472,186**
			1,507,592,643	**1,528,667,569**
Financed by:				
Accumulated Fund	33	6	**1,507,592,643**	**1,528,667,569**

DAVY K. KOECH, PhD, DSc, SS, OGW, MBS
SECRETARY, BOARD OF MANAGEMENT

MOHAMED S. ABDULLAH, M Med, MBS
CHAIRMAN, BOARD OF MANAGEMENT

October 31 st, 2003

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 30TH JUNE 2003

	2002/2003	2001/2002
INCOME	**(Kshs.)**	**(Kshs.)**
Rents from Institutional Houses	8,056,741	Nil
MOH Grants	544,923,424	478,694,384
Special Accounts and Grants	589,532,504	330,000,904
JICA Operational Grants	**31,951,719**	15,656,847
	1,174,464,388	**824,352,135**
EXPENDITURE		
Personal emoluments	161,489,198	157,782,317
Pension and Gratuity	31,577,529	17,208,035
House Allowances	182,317,850	143,745,285
Other Allowances	58,455,619	37,596,994
Medical Allowances	16,084,332	12,812,918
Passage & Leave Expenses	993,540	976,214
Medical Expenses	3,272,917	3,010,012
Refund of Medical Exp. -Ex-Gratia	648,410	549,954
Transport Operating Expenses	11,536,597	3,173,207
Travelling and Accommodation-local	5,009,785	
External Travel & Accommodation	2,641,059	721,412
Postal and Telegrams Expenses	512,302	455,059
Telephone Expenses	11,134,231	10,104,739
Official Entertainment	2,108,066	2,378,864
Exp. Of Board, Committees & Conferences	3,268,868	2,786,456
Electricity Expenses	15,906,976	14,698,506
Water & Conservancy	4,522,383	3,523,139
Laboratory Reagents and Supplies	2,194,525	425,324
Purchase of Drugs and Dressings	1,351,249	1,687,914
KEMRI /JICA Project	6,230,838	6,986,911
Food and Rations	203,583	117,351
Feeds for Animals	592,666	463,412
Purchase of Consumables	2,492,256	2,083,581
Publishing & Printing Exp.	270,446	409,401
Uniforms and Clothing	1,176,769	456,800
Library Expenses	250,090	178,741
Purchase of Stationery	6,021,242	4,790,359
Advertising & Publicity	1,684,991	703,988
Rents and Rates	1,305,177	4,886,499
Computer Expenses	1,484,972	830,873
Miscellaneous & Other Charges	844,561	1,192,330
Special Accounts & Grants	589,532,504	330,000,904
Insurance Expenses	14,619,579	13,581,123
Fees, Commission & Honoraria	Nil	184,810
Training Expenses	404,647	193,250
Maintenance of Plant Machinery & Equipment	2,975,011	3,390,940
Maintenance of Buildings & Stations	14,336,347	9,538,648
JICA Operational Costs	31,951,719	15,656,847
Loss on disposal (NBV)	2,272,028	Nil
Total expenses before depreciation	**1,193,674,862**	**817,579,240**
(Deficit) surplus of income over expenditure	**(19,210,474)**	**6,772,895**
DEPRECIATION EXPENSES		
Motor Vehicles	3,552,238	3,796,311
Office & Medical Equipment	13,263,946	12,691,139
Office Furniture	242,793	232,589
Office Buildings	4,223,384	4,223,384
Residential Buildings	1,875,767	1,875,767
	23,158,128	**22,819,190**
Excess of Expenditure over Income	**(42,368,602)**	**(16,046,295)**

CASH FLOW STATEMENT FOR THE YEAR ENDED 30TH JUNE 2003

	2002/2003 Kshs.	2002/2003 Kshs.
Cash Flows from Operating Activities		
Deficit for the year	(42,368,602)	(16,046,295)
Adjustments for:		
Depreciation	23,158,128	22,819,190
Loss on disposal of equipment	2,272,028	Nil
(Deficit)/Surplus before working capital changes	**(16,938,446)**	**6,772,895**
Decrease/(increase) in debtors	212,172	(93,708)
Decrease in standing imprest	67,841	98,705
(Increase)/decrease in temporary imprest	(53,187)	351,845
(Decrease)/increase in creditors	(5,531,817)	4,886,841
Net cash flow from operating activities	**(22,243,437)**	**12,016,578**
Cash Flows from Investing Activities		
Purchase of fixed assets	(30,145,270)	(175,514,036)
Fixed assets disposal proceeds	2,123,864	Nil
Net Cash used in Investing Activities	**(28,021,406)**	**(175,514,036)**
Cash Flows from Financing Activities		
Capital grant and grant in aid from donors	21,293,676	169,551,950
Net Cash generated from Financing Activities	**21,293,676**	**169,551,950**
Net (decrease)/increase in cash and cash equivalents	(28,971,167)	6,054,492
Cash and cash equivalents at the beginning of period	37,814,906	31,760,414
Cash and Cash equivalents at the end of period	**8,843,739**	**37,814,906**

SCHEDULE OF FIXED ASSETS

ITEM	LAND (KSHS.)	OFFICE BUILDINGS (KSHS.)	RESIDENTIAL BUILDINGS (KSHS.)	MOTOR VEHICLES (KSHS.)	OFFICE & MEDICAL EQUIPMENT (KSHS.)	OFFICE FURNITURE (KSHS.)	TOTAL (KSHS.)
Cost B/fwd	216,175,500	422,338,396	304,573,185	75,926,221	507,645,578	9,303,540	1,535,962,420
Additions	Nil	Nil	1,531,640	2,314,000	25,877,775	421,855	30,145,270
Disposals	Nil	Nil	Nil	(7,195,460)	(2,965,480)	(13,665)	(10,174,605)
DEPRECIATION	**216,175,500**	**422,338,396**	**306,104,825**	**71,044,761**	**530,557,873**	**9,711,730**	**1,555,933,085**
Balance B/fwd	Nil	29,720,091	9,932,972	29,444,891	86,024,425	4,644,658	159,767,037
Charge for the year	Nil	4,223,384	1,875,767	3,552,238	13,263,946	242,793	23,158,128
Disposals	Nil	Nil	Nil	(3,851,535)	(1,919,355)	(7,823)	(5,778,713)
Net Book Value	Nil	**33,943,475**	**11,808,739**	**29,145,594**	**97,369,016**	**4,879,628**	**177,146,452**
30-6-2003	**216,175,500**	**388,394,921**	**294,296,086**	**41,899,167**	**433,188,857**	**4,832,102**	**1,378,786,633**
30-6-2002	**216,175,500**	**392,618,305**	**294,640,213**	**46,481,330**	**421,621,153**	**4,658,882**	**1,376,195,383**

NOTES TO THE ACCOUNTS FOR THE YEAR ENDED 30 JUNE 2003

1. ACCOUNTING POLICIES

a. Basis of Accounting

i. The Accounts are prepared under the historical cost convention.

ii. The Accounts have been prepared on Cash Basis as opposed to Accruals Basis.

b. Depreciation

Depreciation on Fixed Assets is calculated to write off their cost over their estimated useful lives on a straight-line basis at the following rates.

		%
• Office and residential buildings	-	1.0
• Office and medical equipment	-	2.5
• Office Furniture	-	2.5
• Motor Vehicles	-	5.0

2. ACQUISITIONS

a. Donor Funded

During the year ended 30th June, 2003 the Institute received donations of medical and other equipment worth Kshs. 21,293,676 of which Japan International Cooperation Agency's contribution was Kshs. 16,391,456. The contributions were added to the fixed assets schedule as follows:

Item	Amount (Kshs.)
● Office Furniture	236,190
● Medical Equipment	18,743,486
● Motor Vehicles	2,314,000
Total	**21,293,676**

b. Exchequer funded

Capital expenditure incurred by the institute from exchequer funds was as follows:

Item	Amount (Kshs)
● Office Furniture	185,665
● Medical Equipment	7,134,289
● Residential Buildings	1,531,640
Total	**8,851,594**

3. DEBTORS

Included in the balance is Kshs. 120,000,000 deposited with our advocates as commitment to settlement of outstanding accounts on the Staff Housing Project at the Headquarters.

4. SPECIAL ACCOUNTS AND GRANTS

The unexpended balances on Special Accounts and Grants totaling Kshs. 93,483,775 represent donor funds held on their behalf at the balance sheet date.

5. CASH AND BANK BALANCE

The closing cash and bank balance of Kshs. 8,843,739 is composed of cash at hand of Kshs. 57,454.60 and cash at bank of Kshs. 8,786,284.40.

6. ACCUMULATED FUND

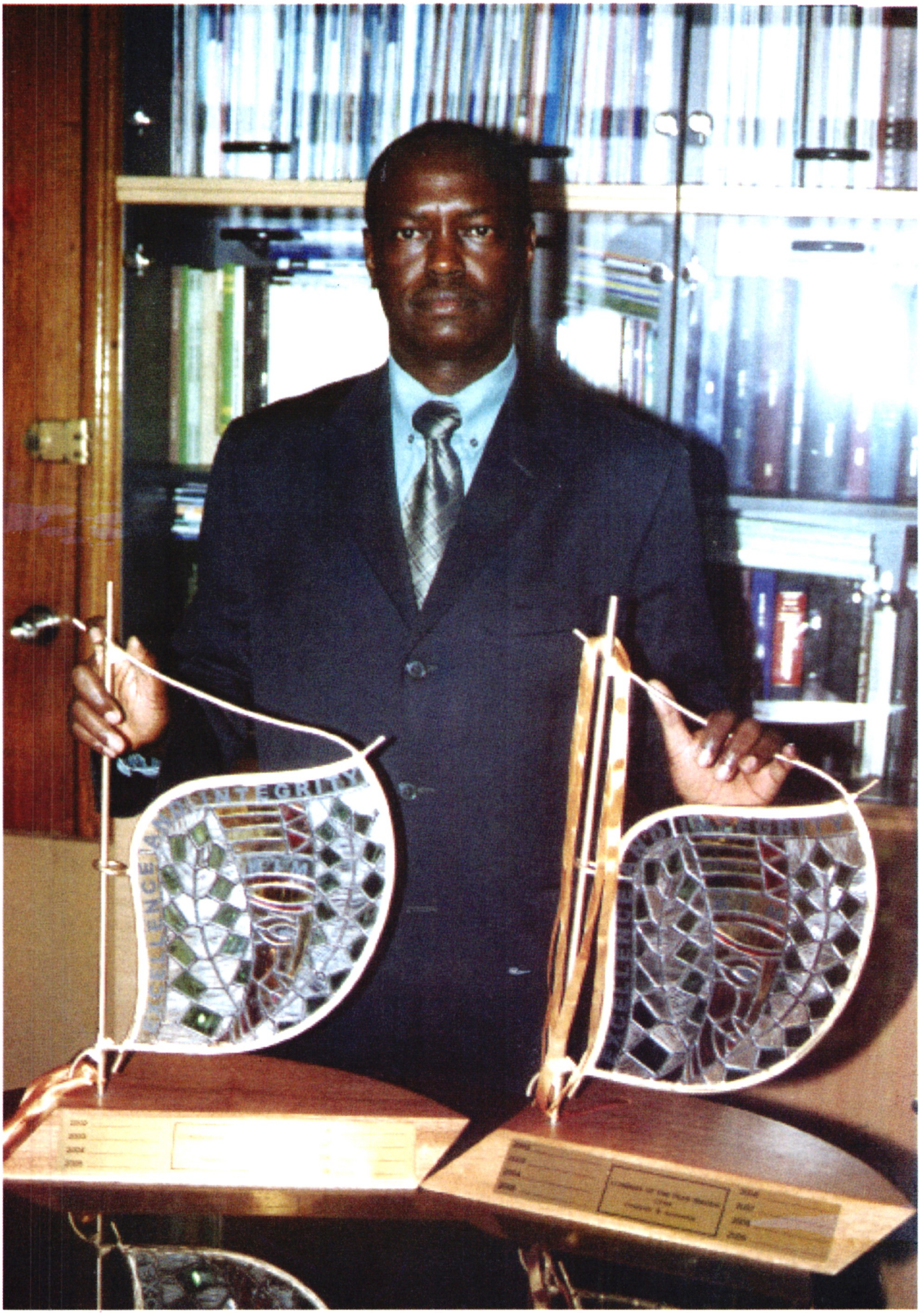
The fund is built and analysed as follows:

	Kshs.
• Balance brought forward as at 1-7-2002	1,528,667,569
• Excess of Expenditure over Income	(42,368,602)
• Support from Donors	21,293,676
	1,507,592,643

UNEXPENDED BALANCES ON SPECIAL ACCOUNTS AND GRANTS

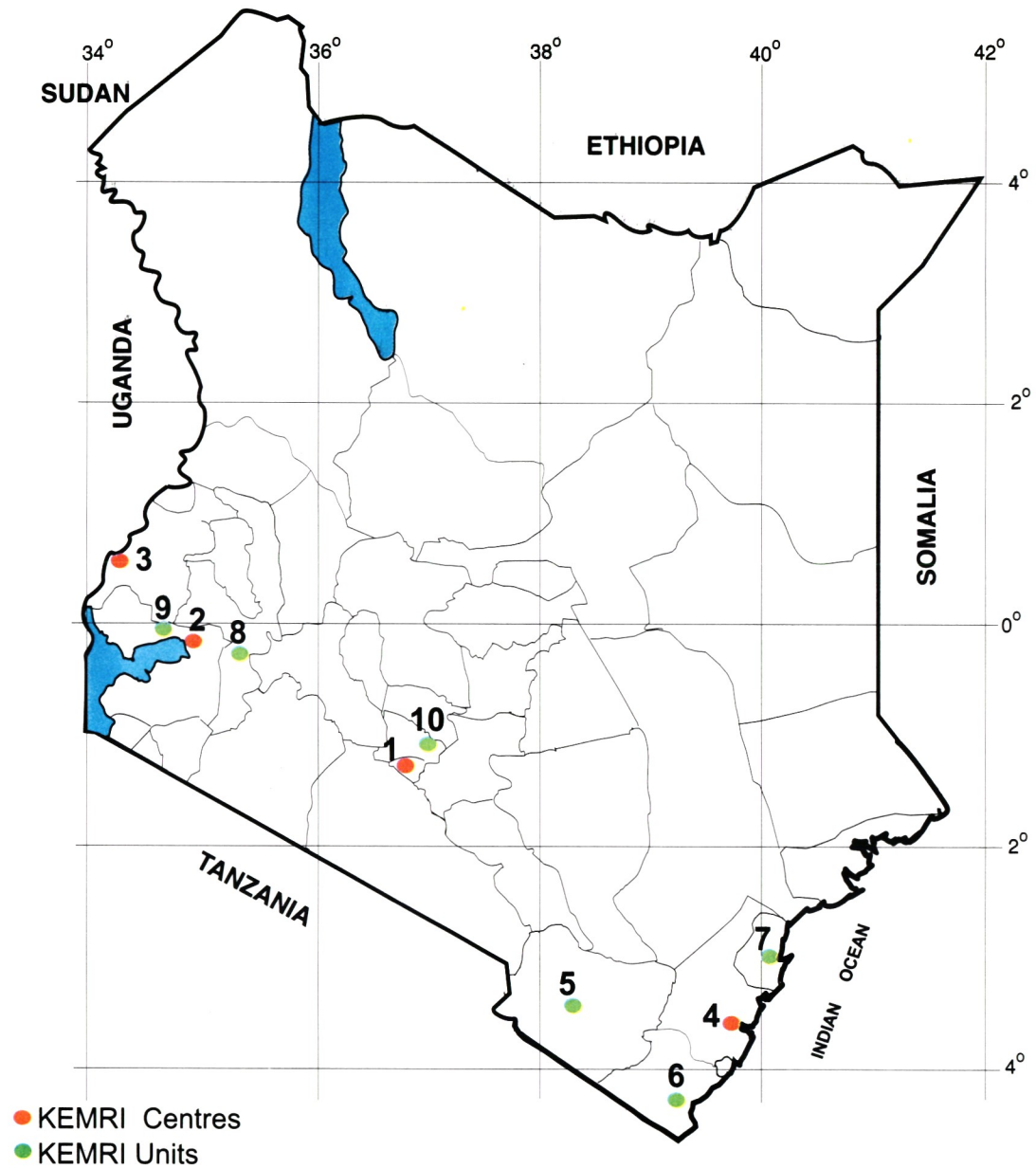
	Balance as at 1.7.2002 (Kshs.)	Received During the year (Kshs.)	Expenditure During the year (Kshs.)	Balance as at 30.6.2003 (Kshs.)
Wellcome Trust Research Laboratories	76,046	3,125,745	2,812,354	389,437
American Embassy - USAMRU Project	45,766,558	207,764,642	245,468,207	8,062,993
USA Gvt. Treasury - Centers for Disease Control & Prevention (CDC)	14,083,194	248,104,942	226,888,732	35,299,404
American Embassy - Others	-	415,905	270,590	145,315
USA Government Treasury - Others	3,193,002	-	3,068,201	124,801
Case Western Reserve University	1,502,835	6,231,671	6,481,248	1,253,258
Commonwealth Secretariat	85,419	-	85,419	-
World Health Organization	17,707,661	27,114,255	32,277,492	12,544,424
UNICEF	2,282,302	247,960	668,710	1,861,552
Royal Tropical Institute	73,059	-	86,038	(12,979)
University of New Mexico	(2,074,379)	6,070,092	3,739,327	256,386
African Medical Services Trust	81,225	-	-	81,225
Smithkline Pharm. Institute	541,543	3,340,868	3,221,920	660,491
University of Otago	(78,211)	129,303	34,303	16,789
Liverpool School of Tropical Medicine	1,276,639	3,837,476	4,257,299	856,816
Inserm Institute National	1,072,331	267,294	1,306,037	33,588
New York State University	-	8,428,956	8,467,324	(38,368)
Rockefeller Foundation	-	1,828,365	-	1,828,365
University of Washington	-	3,746,372	2,510,730	1,235,642
Miscellaneous	16,671,184	59,493,412	47,813,838	28,350,758
TOTALS	**102,370,785**	**580,645,494**	**589,532,504**	**93,483,775**

Participants receiving instruction on the use of the KEMRI PA Kit for diagnosis of HIV 1 during the Third Country Training Programme (TCTP) held in KEMRI.



Director, KEMRI, Dr. Davy K. Koech displays two trophies won during the Company of the Year Awards (COYA) on Creativity and Innovation and the Best Parastatal of the Year.

Map of Kenya showing KEMRI Centres and Units



- KEMRI Centres
- KEMRI Units

Centres

1. NAIROBI
2. KISUMU
3. BUSIA
4. KILIFI

Units

5. TAITA TAVETA
6. KWALE
7. MALINDI
8. KERICHO
9. KOMBEWA
10. MWEA

Scale 1:4 500 000

0 50 100 150 200 250 **Kms**

RESEARCH CENTRES AND SPECIAL COORDINATING CENTRES

Research Centres

The following are the ten research centres of the Institute, with seven in Nairobi, one in Kisumu, one in Busia and one in Kilifi.

1. Centre for Biotechnology Research and Development (CBRD) - **Nairobi.**
2. Centre for Clinical Research (CCR) - **Nairobi.**
3. Centre for Public Health Research (CPHR) - **Nairobi.**
4. Centre for Infectious and Parasitic Diseases Control Research (CIPDCR) - **Busia.**
5. Centre for Microbiology Research (CMR) - **Nairobi.**
6. Centre for Respiratory Diseases Research (CRDR) - **Nairobi.**
7. Centre for Traditional Medicine and Drug Research (CTMDR) - **Nairobi.**
8. Centre for Vector Biology and Control Research (CVBCR) - **Kisumu.**
9. Centre for Virus Research (CVR) - **Nairobi.**
10. Centre for Geographic Medicine Research, Coast (CGMRC) - **Kilifi.**

Special Coordinating Centres

1. The Eastern and Southern Africa Centre of International Parasite Control (ESACIPAC), which is part of the Global Parasite control initiative (The Hashimoto initiative), and is based in KEMRI.

2. The Institute hosts the Institute of Tropical Medicine and Infectious Diseases (ITROMID), a joint programme with JKUAT for MSc. and PhD Degree Training.

3. Infectious Diseases Programme coordinates Research and Training under The Okinawa Initiative of combating infectious diseases globally.

CONTACT:

DIRECTOR

KENYA MEDICAL RESEARCH INSTITUTE (KEMRI)
P.O. BOX 54840 - 00200
NAIROBI
Tel: 254 (020) - 2722541
Fax: 254 (020) - 2720030
E-mail: director@kemri.org
Website: www.kemri.org