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PD-AAC-722-B1

TANZANIA

CANCER CONTROL

CODEL INC. COORDINATION IN DEVELOPMENT

(OPG)

# CANCER CONTROL

## For Tanzania



THE NUMBERS GIVE THE ESTIMATED NEW CANCER PATIENTS FOR 1977 FOR EACH ADMINISTRATIVE REGION OF TANZANIA (Total Estimate: 6000)

PROJECT TITLE: CANCER CONTROL FOR TANZANIA

PROJECT LOCATION: TANZANIA

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2. University of Dar-es-Salaam, Tanzania
3. Muhimbili Medical Centre, Dar-es-Salaam, Tanzania
4. Kilimanjaro Christian Medical Centre, Moshi, Tanzania
5. Bugando Hill Hospital, Mwanza, Tanzania
6. Christian Medical Board of Tanzania, Dar-es-Salaam, Tanzania
7. Christian Council of Tanzania, Dar-es-Salaam, Tanzania
8. Catholic Secretariat of the Tanzania Episcopal Conference
9. Medical Missionaries of Mary and Maryknoll Sisters, Tanzania
10. Episcopal Church and Anglican Church, Tanzania
11. World Health Organization, Cancer Unit, Geneva, Switzerland
12. International Agency for Cancer Research, Lyon, France
13. Howard University and Cancer Research Center
14. American Cancer Society

BRIEF DESCRIPTION OF PROGRAM

A combined expert assistance and training program for Tanzanian physicians and paramedical personnel with the aim to establish an effective cancer control program in Tanzania. Special emphasis will be placed on cancer prevention and detection.

COST

Full Program (five years) \$809,468. -

US AID Request (61.5%) \$497,726. -

## TABLE OF CONTENTS

### 1. PROJECT PURPOSE AND DESCRIPTION

	Pages
1.1 Project Purpose	6
1.2 Target Group of Beneficiaries	6
1.3 General Description of the Project	6
1.3.1 Cancer Surveys	7
1.3.1.1 Computerization of the Tanzania Tumor Registry	7
1.3.1.2 Analysis of Hospital Records	7
1.3.1.3 Survey of the Hanang District	8
1.3.1.4 Expansion of the Tumor Registry	8
1.3.1.5 Yearly Reports	8
1.3.1.6 International Importance of Cancer Surveys in Tanzania	8
1.3.2 Cancer Training	9
1.3.2.1 Training of Physicians	9
1.3.2.2 Training of Other Physicians	9
1.3.2.3 Training of Medical Students	9
1.3.2.4 Training of Allied Scientists	10
1.3.2.5 Training of Technologists	10
1.3.2.6 Training of Other Health Workers	20
1.3.2.7 Public Education	10
1.3.3 Cancer Research	11
1.3.3.1 Research on Cervix Cancer	11
1.3.3.2 Research on Skin Cancer in the Lower Leg	11
1.3.3.3 Research on Skin Cancer in Albinos	11
1.3.3.4 Research on Liver Cancer	11
1.3.3.5 Research on Esophagus Cancer	11
1.3.3.6 Research on Stomach Cancer	12
1.3.3.7 Research on Kaposi's Sarcoma	12
1.3.3.8 Research on Burkitt's Lymphoma	12
1.3.3.9 Research on Retinoblastoma	12
1.3.3.10 Research on Brain, Bone, Testis and Kidney Tumors and Lymphomas/Leukemias	12
1.3.4 Cancer Prevention	13
1.3.5 Cancer Detection	13
1.3.6 Cancer Control Network	14

1.3.6.1	Expansion of the Oncology Service at the Muhimbil Medical Center in Dar-es-Salaam	15
1.3.6.2	Kilimanjaro Christian Medical Center (KCMC)	16
1.3.6.3	Bugando Hill Hospital, Mwanza	16
1.3.6.4	Regional Hospitals	17
1.3.6.5	District Hospitals	17
1.3.6.6	Other Hospitals, Dispensaries and Mobile Clinics	17
2.	PROJECT BACKGROUND	18
2.1	History of Proposed Program	18
3.	PROJECT ANALYSIS	20
3.1	Economic Effects	20
3.2	Technology	20
3.3	Sociocultural Factors	20
3.4	Relationship to Other Considerations in the Guidelines Governing Funding for Private and Voluntary Organizations in Connection With Development Assistance Under the Foreign Assistance Program	20
3.5	Institutionalization with Domestic Resources	21
3.6	Role of Howard University	21
3.7	Role of the World Health Organization	22
4.	PROJECT DESIGN AND IMPLEMENTATION	23
4.1	Implementation Plan	23
4.1.1	Carrying Out of the Project	23
4.1.2	Provision for Technical Assistance	24
4.1.3	Basic Assumptions	24
4.1.4	Proposed Disbursement and Procurement Procedures and Related Controls	24
4.1.5	Schedule of Actions	24
4.1.6	Monitoring of the Implementation Plan by the PVO	24
4.1.7	Waivers of US AID Rules and Regulations	25
4.2	Prior Experience in Project and Related Areas	25
4.3	Host Country Activity in Project Program Areas	25
5.	MEASUREMENT AND EVALUATION OF PROJECT ACCOMPLISHMENTS	26
5.1	Schedule of Plan Accomplishments	26
5.2	Measurement of Project Accomplishment	26
5.2.1	Routine Evaluation	26
5.2.2	In Depth Evaluation	26
5.2.3	Joint Evaluation	26
5.2.4	Evaluation/Design Elements	26

6. FINANCIAL PLAN	27
6.1 Budget Breakdown	27
6.1.1 Personnel Costs	27
6.1.2 Training Costs	27
6.1.3 Commodity Costs	27
6.1.4 Other Costs	27
7. CONDITIONS	28
7.1. Evidence That The Project's Requirements For Supportive Resources Other Than Requested of AID will be Available	28
7.2 Explicit Evidence of Approval of the Proposed Project by the Host Country Government	28
3. STATUTORY CONSIDERATIONS	28
BUDGET	29
LOGICAL FRAMEWORK	30
LIST OF APPENDICES	31
Appendices 1 - 11	32 - 42

## 1. PROJECT PURPOSE AND DESCRIPTION

- 1.1 Project Purpose: To establish a viable Cancer Control Program, which effectively contributes to the health of the Tanzanian people.

Cancer is an important health problem in Tanzania. About 1500 new microscopically proven cancer cases are recorded but at least 6000 new cancer cases occur every year. This great number imposes a heavy burden on the Tanzanian Government and Mission Hospitals, since cancer patients are difficult to manage and occupy hospital beds for long periods. The Ministry of Health as well as the Christian Medical Board of Tanzania are therefore keenly interested in improving cancer services.

It is also hoped that this project will provide a model for many other developing countries. Contrary to widespread misconceptions, cancer is frequent in all developing countries and is rapidly rising in relative importance as progress is made in the control of infant mortality and infectious diseases. It is most difficult for a developing country to implement an appropriate cancer control program, because usually no native cancer experts are available, because sophisticated technics and equipment are required, because there are so many misconceptions about cancer and because the cancer problems in developing countries differ greatly from the cancer problems in industrialized countries. Cancer assistance programs appear therefore particularly appropriate for international cooperation. They may even be more rewarding than the cancer control efforts in industrialized countries, because the most frequent cancers in developing countries are easier to prevent, to detect and to cure.

- 1.2 Target Group of Beneficiaries: The fifteen million inhabitants of Tanzania, for which cancer, like everywhere else, is the most feared disease. The program will be of special benefit for the poorest majority, since the two most frequent cancers (uterus and skin cancer, accounting for 27% of all cancer) are typical cancers of poverty. Women will benefit more than men, since cancer control is generally more effective for female cancers.

- 1.3 General Description of the Project: A nucleus for a Cancer Control Program for Tanzania exists in the Oncology Service of the Muhimbili Medical Centre in Dar-es-Salaam, which will be described in more detail later. This project is designed to strengthen this Oncology Service particularly in respect to cancer prevention and detection and to expand it to the other areas of Tanzania. This is in line with the avowed policy of the Tanzanian Government to emphasize health services to the rural areas, where 90% of the people live.

For the detailed descriptions of the proposed project, it is subdivided into (1) cancer surveys, (2) cancer training, (3) cancer research, (4) cancer prevention, (5) cancer detection and (6) cancer control network.

1.3.1 Cancer Surveys: Reliable cancer statistics are essential for an effective cancer control program. They are not available for Tanzania at present, but a good basis is available in the Tanzania Tumor Registry. This registry has been in operation continuously since 1966. However, it is only a registry of biopsy specimen which were sent and were examined in the pathology departments of the Muhimbili Hospital in Dar-es-Salaam and, since 1973, also in the pathology department of the Kilimanjaro Christian Medical Centre (KCMC) in Moshi. The following steps are planned to obtain, with the help of this registry, reliable data on cancer incidence and mortality:

1.3.1.1 Computerization of the Tanzania Tumor Registry: Altogether more than 10,000 entries have been recorded in the Tanzania Tumor Registry with an average of 1500 for the last five years. Beside the histological diagnosis, the age, sex, tribe, referring hospital and doctor have been registered in most patients. This large amount of data obviously can only be evaluated efficiently by computerization of the data. For this purpose a coding scheme has already been developed and tested. The preliminary tables from this trial run have been essential for the planning of this project. However, due to the great amount of labor involved for coding and verification, only one year has been coded. The coding of the existing data and the registry of the incoming new data requires the full time attention of two registry workers in Tanzania.

1.3.1.2 Analysis of Hospital Records: With the help of the Tanzania Tumor Registry, a number of representative hospitals will be chosen for visits. The clinical records of these hospitals will then be reviewed and the actual number of cancer patients seen will be determined. The comparison of these clinical records and of the Tumor Registry data will yield a correction factor which can be used to obtain an estimate of the cancer incidence in Tanzanian Hospitals.

- 1.3.1.3 Survey of the Hanang District: The Hanang District is one of the four districts in the Arusha region in which 200 000 people, about 1.5% of the Tanzanian population live. It is the site of a CODEL project supported by US AID in which a house to house health survey will be conducted. It is hoped that this will give an opportunity to record all cancers, even those not admitted to hospitals. This sampling procedure is similar to the procedure, which is used to determine cancer incidence in the United States.
- 1.3.1.4 Expansion of the Tumor Registry: For the future it is planned to include in the cancer registry also all clinically reported cases as well as the type of treatment. For the major hospitals this will be done in connection with yearly visits, during which cancer prevention and detection and public education programs will be promoted. For most of the small hospitals, visits will be less frequent. It will also be attempted to obtain follow up information.
- 1.3.1.5 Yearly Reports: It is planned to digest all available information on cancer once a year into a "Tanzania Tumor Report." It will contain the basic statistical data in a form, that will permit the use of the data in the reports of the World Health Organization and of the International Union Against Cancer.
- 1.3.1.6 International Importance of Cancer Surveys in Tanzania: Data on cancer incidence and cure rates in Africans are of great interest for cancer research, since there are marked differences in black and white Americans. A comparison of black Americans and Africans could permit a separation of environmental and genetic factors for many cancers. The four older existing African Cancer Registries, Kampala in Uganda, Maputo in Mozambique, Johannesburg in South Africa and Ibadan in Nigeria, encompass not more than 2% of the population of their countries, many of their cases are not histologically proven and they do not function properly anymore due to political upheavels in the last decade. In contrast, the Tanzania Tumor Registry covers the whole country of 15 million people, histological slides are available for every case and the political situation is stable. The Tanzanian Tumor Registry promises therefore to become a most valuable resource for cancer research.

1.3.2 Cancer Training: Training for the Tanzania Cancer Control Program will be provided on the following levels:

1.3.2.1 Training of Physicians: Radiotherapists (Radiation Oncologists) and Chemotherapists (Medical Oncologists) are the two specialists which are indispensable for any cancer program. In view of the shortage of Tanzanian physicians it is proposed to train all physicians assigned to the cancer program in both radiotherapy and chemotherapy, as it is customary in the Scandinavian countries. Since cancer of the female genitalia accounts for about one quarter of all cancer in Tanzania, at least one of these physicians should have gynecological training.

The training of such cancer specialists (oncologists) takes at least 3 years. Arrangements have been made with the Department of Radiotherapy at Howard University, that part of the training will be provided in the United States. The other part of the training will be provided at the Muhimbili Medical Centre in Dar-es-Salaam. This arrangement should overcome the common problems encountered in the training of cancer specialists from developing countries in the USA, namely that they see inappropriate types of cancer patients, (e.g. too many lung cancer and too few cervix cancer patients), that they get used to too complicated equipment (e.g. betatrons and accelerators instead of cobalt machines) and that they lose contact with their native country.

Three physicians have been selected by the Tanzanian Government and the Muhimbili Medical Centre for training as cancer specialists: Dr. Luande, Dr. Mgala (a gynecologist) and Dr. Muindi. Their curricula vitae are attached as Appendix 10. Additional physicians will be selected as the Cancer Control Program expands.

1.3.2.2 Training of Other Physicians: Beside the training of these oncologists, opportunities for continued education in cancer will also be provided to other physicians in a "Continuing Education Program." This will be done in Tanzania by conferences, lectures, publications, circulars, personal letters and visits to hospitals and clinics. This postgraduate education will be organized with the advice and consent of the Ministry of Health of the University of Dar-es-Salaam and of the Christian Medical Board of Tanzania.

1.3.2.3 Training of medical students: Various aspects of cancer are at present taught in different courses such as pathology, surgery, gynecology, medicine, pediatrics, etc. in the Medical Faculty of the University of Dar-es-Salaam. While this

should be continued. separate lectures with an overview of the whole cancer problem are required to raise the cancer awareness of the future physicians and leaders in the health field in Tanzania.

- 1.3.2.4 Training of allied scientists: In view of the need for Tanzanian physicists, engineers and biologists in other fields, it is proposed to train only five allied scientists under this project. One of them should have a good electronics background and another should have some experience with computers in view of the importance of these fields for oncology. These allied scientists will be responsible for the maintenance of all oncology equipment in Tanzania.
- 1.3.2.5 Training of technologists: It is planned to establish a school for "Oncology technologists" at the Muhimbili Medical Centre. A large pool of capable recruits is available. This school would be similar to other schools already in operation at the Muhimbili Medical Centre. Beside radiation oncology and medical oncology, the curriculum will include courses on cancer epidemiology, etiology, prevention, detection, treatment and rehabilitation. Its aim is to provide Tanzania with competent "Oncology Assistants," who can effectively perform many functions, which are done in other countries by physicians.
- 1.3.2.6 Training of other health workers: The training of other health workers such as nurses, nurses aides and village health workers will receive high priority. It is believed, that the essentials of cancer prevention and early detection as they apply to Tanzania, can be quickly and effectively taught to every health worker. To do this it is, however, first necessary to research the principal cancer problems such as cervix cancer, skin cancer, connective tissue cancer, breast cancer and liver cancer and lymphomas, which account for more than half of all cancers in Tanzania. Decisions will next be required on the best approach to their prevention and detection. These can then be assembled in easy to understand pamphlets and other audio-visual presentations, which will be widely distributed, for instance to the 20 training centers of the US AID Maternal/Child Health (MCH) project.
- 1.3.2.7 Public Education: Public education is essential for any cancer control program, but it must be carefully planned and properly carried out, to produce cancerawareness without cancerphobia. It also must be coordinated with the availability of cancer treatment facilities and appropriately trained personnel to avoid public frustration. A pilot study for public education is planned in connection with the US AID supported Adult Education Program and with the "Operation Bootstrap," in the Arusha region.

1.3.3 Cancer Research: The research work carried out under this project will be applied research, aimed at determining the best ways and means for cancer prevention, detection and management. The following cancers are targeted for special attention:

- 1.3.3.1 Research on Cervix Cancer: Cervix cancer is related to the lack of male circumcision (which varies in Tanzania widely with tribal and religious customs), to early marriage, to early sexual intercourse and to the lack of water for bathing. The assessment for their role in Tanzania is essential for the planning of a prevention program for cervix cancer and for identifying women with high probability for cervix cancer detection.
- 1.3.3.2 Research on Skin Cancer in the Lower Legs: Skin cancer of the lower legs appears to be the second most frequent cancer in Tanzania. It also seems to be a very common cancer in many other African countries, but accurate figures are hard to come by since it is not separated in most statistics from other skin cancers. Literature on its causes and clinical features is scanty since this type of skin cancer does not occur in Europe and North America. This cancer should be easy to prevent, easy to detect and easy to cure in its initial states. The common treatment at present in Tanzania is amputation, but radiotherapy may be equally successful while avoiding amputation of the leg.
- 1.3.3.3 Research on Skin Cancer in Albinos: Skin cancer in Albinos is important in Tanzania, because it is a cancer, which grows slowly and kills the patient usually only after 2 or 3 decades of suffering and hospitalization. Little information is available on skin cancer problems in Albinos in the literature, but it does not appear difficult to work out an effective prevention program.
- 1.3.3.4 Research on Liver Cancer: Since liver cancer is an important cancer in America and Europe, a large literature is available with many hypotheses on its cause. The main task in Tanzania will be to decide, whether aflatoxins in food are important in its genesis or whether liver cancer is based on nutritional deficiencies (of protein) in early life. Research on this question is required before an effective preventive program can be formulated.
- 1.3.3.5 Research on Esophagus Cancer: Esophagus cancer is surprisingly frequent in Tanzania as it is among the black population of South Africa. It is also interesting to note that a very marked rise of esophagus cancer has been observed in the last two decades among the black population in the USA. In the USA most esophagus cancer in Blacks are related to heavy alcohol intake. This may also be an

important factor in the etiology in esophagus cancers in Tanzania. However, poor nutrition in childhood could be another essential factor. It is believed that the study of the esophagus cancer incidence in the various regions and among the various tribes in Tanzania would not only help to develop a prevention program for Tanzania, but would also shed some light on esophagus cancer in general. The studies on esophagus cancer will be carried out in close cooperation with the International Agency for Cancer Research in Lyons, which has expanded a major effort to clarify the etiology of esophagus cancer.

- 1.3.3.6 Research on Stomach Cancer: Stomach cancer also is an important cancer in Tanzania. Based on the large amount of research carried out in Europe, America and Japan, one must expect nutritional deficiency as a major factor. The differences in regional and tribal incidence may also for this cancer help to identify the specific nutritional deficiency and may point to the proper preventive measures.
- 1.3.3.7 Research on Kaposi's Sarcoma: Kaposi's sarcoma, a rare disease in the United States, may account for 3% of all cancers in Tanzania. Since it usually involves the legs, it is a very disabling disease in a country where walking is essential for every daily activity. No clue is available for its prevention, but since Kaposi's sarcoma is easy to detect and responds well to therapy it can be successfully managed by early treatment.
- 1.3.3.8 Research on Burkitt's Lymphoma: Burkitt's lymphoma is the only tumor with an unusual frequency in Africa which has received a great deal of attention in the world literature. However, most papers deal with the possibility of viral etiology and little attention has been paid to the prevention. For this, a comparison of incidence in various regions in Tanzania should offer significant clues especially in comparison with the prevalence of malaria. The Zanzibar region, for instance, in which malaria has been eliminated has reported no cases of Burkitt's lymphoma in recent years.
- 1.3.3.9 Research on Retinoblastoma: While other tumors of the eyes are rare, retinoblastoma appears to occur with high frequency. This tumor can be detected early by teaching health workers to watch out for the "cat's eye" light reflection in infants.
- 1.3.3.10 Research on brain, bone, testis and kidney tumors and lymphomas/leukemias: For these tumors, histological subgroups must be distinguished to bring out black/white differences. The Tanzanian Tumor Registry is particularly well equipped for such studies, since exact histological reports are available.

- 1.3.4 Cancer Prevention: Cancer prevention obviously is the most desirable approach to cancer control. In the United States, cancer prevention has received much less attention and support than the efforts to improve treatment and this imbalance has been severely criticized lately. However, in fairness one must consider that for the five US cancers, which account for more than half of all cancer deaths (Lung cancer, 23%, Colon cancer 11%, Breast cancer 9%, Pancreas cancer 5%, Prostate cancer 5%) no effective prevention is known except for lung cancer. And for lung cancer which can be largely prevented by not smoking cigarettes, the great efforts of the American Cancer Society and of the Surgeon General have been unable to stop lung cancer from becoming the most deadly cancer and from remaining the fastest rising cancer in the USA.

Fortunately, cancer prevention is much more rewarding in Tanzania. The two most frequent cancers, (cervix cancer 18% and skin cancer 9%) are preventable by relatively simple measures. Prevention also appears promising for many other cancers, which are frequent in Tanzania.

Specific plans can be only formulated, after more detailed statistical cancer data have been obtained and after some research has been conducted, as indicated above under "Research" for specific cancers. We expect that this program can come up within two years with firm recommendations for the prevention of many cancers in Tanzania and that a major effort will then be mounted to teach the principles of cancer prevention to all health workers.

- 1.3.5 Cancer Detection: Cancer detection should become an important factor in Cancer Control in Tanzania, because the most frequent cancers in Tanzania can be easily detected, while they are in curable stages. This also is in marked contrast to the situation in the USA and other industrialized countries, where of the most deadly cancers (lung, colon, breast, pancreas and prostate) only breast cancer is relatively easy to detect, although not as readily as cervix and skin cancer, which are the two most frequent cancers in Tanzania. Another reason why cancer detection should pay off much more in Tanzania than in the USA is that the chances for cure for the most frequent cancers in the USA is much lower than for the most frequent cancers in Tanzania.

As for cancer prevention, more accurate statistical studies and some research is needed before cancer detection can be taught to health workers in Tanzania. This should also be possible within the first two years of this program. Obviously, it would be best to teach cancer detection and cancer prevention together. To do this as soon as possible in a simple and precise form, it considered the major challenge under this program.

- 1.3.6 Cancer Control Network: The establishment of a cancer control program is obviously a difficult project and could not be undertaken without a sound organizational basis in the existing health system and without a team of cancer experts. Fortunately, both are available in Tanzania.

An excellent organizational basis for a cancer control program in Tanzania is available in the Oncology (Cancer) Service of the Muhimbili Medical Centre in Dar-es-Salaam. This Centre is the principal teaching hospital in Tanzania and with twelve hundred beds, the largest hospital in the country. Most cancer patients are referred to it for consultation and treatment. It incorporates the Medical Faculty of the University of Dar-es-Salaam and its Director is also the Dean of the Medical College. During its recent reorganization, in which the Muhimbili Medical Centre has become an independent parastatal organization, a Department of Radiology and Oncology was created as one of the major components of this Centre. The Oncology Service of this department is not only charged with the responsibility for the treatment of the cancer patients at the Muhimbili Medical Centre, but is also expected to tackle, on a nationwide basis, cancer prevention, cancer detection, cancer research and cancer surveys. In the Oncology Service, we have therefore a Government sponsored and University connected service, whose aims coincide with the specific purposes of the proposed project.

Beside a sound organizational structure, the second precondition for a successful cancer control program is the availability of a team of cancer experts. Many of the essential members of such a team are available at the Muhimbili Medical Centre; Prof. Hiza, the Chairman of the Department of Surgery and Prof. Philipps are two senior surgeons who have made significant contributions to cancer management and cancer research in Tanzania. Prof. Nhonoli, the Director of the Muhimbili Medical Centre, is an internist with special interest in cancer and one of his junior associates, Dr. J. Muindi is currently training in medical oncology. The Chairman of the Department of Obstetrics and Gynecology, Prof. Mtimavalye and two of his associates, Dr. Kairuki and Dr. Mgala have made special efforts to improve cervix cancer treatment since this cancer is so frequent among their gynecological patients. The Department of Pathology under its present Chairman, Prof. Mutoka and under its former Chairman, Prof. Shaba has supervised for more than ten years the Tanzanian Tumor Registry. Another pathologist, Dr. Raj has special experience and training in cytology. The Department of Pathology also has an excellent Hematology Laboratory, whose Chief, Dr. Lema has taken a special interest in Leukemia in Tanzania. A modern radiotherapy facility with a cobalt teletherapy machine has been in operation since 1972. It is directed by Prof. Henschke and presently staffed by radiotherapists on assignment from Howard University. However, two experienced Tanzanian physicians, Dr. Luande and Dr. Mgala have been chosen for training in Radiotherapy. All aforementioned

physicians will hold, under the new organization of the Muhimbili Medical Centre, appointments in the Oncology Service, beside their positions in their original departments. This is the same type of organizational structure, which is now used in many of the new Cancer Centers, which have been created by the 1972 Cancer Control Act of the Congress of the United States.

The well planned organization of Oncology and the availability of cancer experts at the Muhimbili Medical Center has produced a high level of competence in cancer treatment at the Muhimbili Medical Centre. The patients in this hospital receive some of the best treatment available in Africa and management seems quite comparable to that in the leading hospitals in Europe and in the North America. This is in itself a remarkable accomplishment and has eliminated the need to send cancer patients to other countries for treatment.

Unfortunately, not all cancer patients in Tanzania benefit from the good cancer treatment facilities and services available in Dar-es-Salaam, because many of them never reach Dar-es-Salaam due to the lack of an effective nationwide cancer organization. In addition, little is done at present in training additional cancer experts and allied personnel in cancer prevention, in cancer detection, in cancer research and in cancer surveys. The importance of these areas are clearly recognized but sufficient funds are not available. It is in these fields, that the proposed program is designed to impact.

For the initial part of this program, the Muhimbili Medical Centre will be used as the base of operation. However, as soon as funds and personnel will become available, subcenters will be established to serve the areas far away from Dar-es-Salaam more effectively. Tentative plans for this cancer organization are outlined below, subdivided according to the major hospitals.

- 1.3.6.1 Expansion of the Oncology Service at the Muhimbili Medical Centre in Dar-es-Salaam: The initial expansion of the cancer service at the Muhimbili Medical Centre in Dar-es-Salaam will be the improvement of the Tanzania Tumor Registry and the initiation of a formal training program for Oncology Technologists. These will be recruited mostly from high school graduates, who failed to gain admission to the College of Medicine, but candidates will also be sought, who have a background in technical fields such as mechanics and electronics. The program will be structured similar to other medical technologists courses (laboratory technology, x-ray diagnostic technology, etc.) in existence at the Muhimbili Medical Centre.

The Muhimbili Medical Centre has one of the few radiotherapy facilities in Central Africa. The only other up to date (supervoltage) radiotherapy centers in Central Africa are in Nairobi, Lagos and Monrovia. Future plans for the improvement of the Oncology Service at the Muhimbili Medical Centre include improvements of the facilities for examining patients, for diagnostic work up, for waiting and for intracavitary and interstitial radiotherapy. It is also proposed to approach German government and Church organizations for the donation of additional equipment. If these plans materialize, the Muhimbili Medical Centre would become the much needed Cancer Center for Southeastern Africa.

- 1.3.6.2 Kilimanjaro Christian Medical Center (KCMC): The KCMC is the regional teaching and consulting hospital for northeastern Tanzania. It is located in Moshi, 500 km north-northwest from Dar-es-Salaam at an elevation of 1350 m near Mount Kilimanjaro. It has 320 beds and is associated with the 100 bed district hospital in Moshi. The KCMC was built and equipped for 45 million shillings (\$6.5 million) and opened in April, 1970.

As far as we can determine at present, the KCMC has the largest number of cancer patients and the Kilimanjaro region has the highest cancer incidence. There is some concern, that the KCMC may be swamped with cancer patients, if radiotherapy would be available here. Fortunately, transportation from the Kilimanjaro Region to the Muhimbili Center has been greatly improved by the acquisition of new locomotives, which have cut the time for the rail service, which most cancer patients use, to about 10 hours.

Clearly KCMC remains one of the hospitals, which is in great need of a better service to its cancer patients. Professor Henschke has visited the KCMC on several occasions and is well acquainted with its director, its staff, the Regional Commissioner and former Minister of Health, Ndugu Sijaons, and the church organizations in this area.

- 1.3.6.3 Bugando Hill Hospital, Mwanza: The Bugando Hill Hospital is the regional consulting and teaching hospital for northwestern Tanzania. It is located in Mwanza, the largest city in this area. It lies at an elevation of 1250 m, 1200 km northwest of Dar-es-Salaam on the shores of Lake Victoria. The Bugando Hill Hospital is designed for 600 beds. It was completed in December, 1971 at a cost of 50 million shillings (US \$6.3 million). A space on the ground floor has been set aside for future radiotherapy. The area is well suited for a cobalt teletherapy facility.

Patients from Mwanza now require 3 days to make the rail trip to Dar-es-Salaam, and this is obviously impeding the referral of cancer patients for radiotherapy. The new Medical Superintendent, Dr. W.K. Ntuyabaliwe is a gynecologist with long interest and experience in cervix cancer treatment and meetings are scheduled at Professor Henschke's next trip to Tanzania to explore the possibility to establish the first Oncology sub-unit at the Bugando Hill Hospital.

- 1.3.6.4 Regional Hospitals: Each of the 22 administrative regions of Tanzania has a "Regional Hospital." It is usually the major hospital of the region and serves as a referral center and a training institution for allied health personnel. Regional hospitals obviously are of great importance in a cancer control network, but a detailed study is necessary to find the best ways and means to include them in a cancer control program. Particular attention will be paid to hospitals in the south and southwest, where no teaching hospitals are available.
- 1.3.6.5 District Hospitals: Each of the 22 regions of Tanzania has several districts and each of these has a designated "District Hospital." Several of these are mission hospitals, e. g. the Dareda hospital, which is the District hospital for the Hanang District (see CODEL/US AID Hanang Project under 1.3.1.3 in this proposal). District hospitals appear particularly well suited for pilot studies in Oncology.
- 1.3.6.6 Other Hospitals, Dispensaries and Mobile Clinics: A thorough study is planned to determine the role of these smaller health units for cancer control. They will receive special attention, since they are of crucial importance for cancer detection and prevention.

## 2. PROJECT BACKGROUND

- 2.1 History of Proposed Program: CODEL's interest in Cancer Control for Tanzania is based on information from the Christian Medical Board of Tanzania that "cancer is frequent in Tanzania and that it presents a difficult and heartbreaking problem to the patients and the medical staff of the V.A. hospitals in Tanzania." (Appendix 3). A Cancer Control Program in Tanzania also has been strongly advocated to CODEL by the Christian Council of Tanzania (Appendix 4) and by the Catholic Secretariat of the Tanzania Episcopal Conference (Appendix 5).

According to the presently available information, fourteen Mission Hospitals in Tanzania are supported by organizations, which are CODEL members (Medical Missionaries of Mary 4 hospitals; Maryknoll Sisters 2 hospitals; Episcopal and Anglican Church 8 hospitals). The number of new cancer patients in these hospitals is estimated between 300 and 400 per year. These fourteen hospitals appear representative in size and location of the hospitals in Tanzania. It is planned to hold a meeting between members of these hospitals and of the Oncology Service of the Muhimbili Medical Centre in Dar-es-Salaam in August, 1977.

The background of the proposed program dates back 10 years to December, 1968 when Prof. Henschke visited East Africa on a survey tour of the cancer facilities. Dr. Lyimo, the Tanzanian Radiologist at the Muhimbili Hospital in accord with the Minister of Health, the Honorable L. Sejaona asked for the donation of a cobalt machine for radiotherapy, because none was available in Tanzania and patients had to be sent abroad for treatment. Arrangements were then made for the installation of an efficient and simple to maintain cobalt machine. After some delay, due to the necessary construction of a special building, this machine was put into operation in 1972. This cobalt machine provided satisfactory service under the direction of Dr. Lyimo and two Bulgarian radiotherapists, supported by occasional visits of members from Howard University. In February, 1976, Dr. Lyimo, the only Tanzanian physician trained in radiotherapy, was promoted to Medical Director of the Kilimanjaro Christian Medical Center (KCMC) in Moshi and the Tanzanian Government was unable to secure the services of expatriate radiotherapists. Many patients continued to be referred to the Muhimbili Hospital, where no radiotherapy could be given. The Ministry of Health then sent an emergency request to Professor Henschke, to provide a radiotherapy team for the Muhimbili Hospital. Howard University responded promptly and has provided since May, 1977 radiotherapists for the Muhimbili Medical Centre.

In the course of the reorganization of the Radiotherapy Service at the Muhimbili Hospital, the Minister of Health asked Prof. Henschke to develop a comprehensive cancer plan for Tanzania. With the consent and encouragement of Howard University, Professor Henschke developed a tentative "Radiation-Oncology Programme," which was discussed and approved in principle by the Minister of Health, the Honorable L.D. Stirling in a conference in the Ministry of Health on September 9, 1976 (see Appendix 12). In addition to the meetings with the Minister of Health and his principal associates, numerous discussions were held with representatives of all organizations interested in medical care in Tanzania. Contact also was established with the American Embassy and US AID/Tanzania, which recommended to submit an application for a US AID grant. Meetings were also held in November, 1976 with US AID/Washington. Contact was established through US AID with CODEL and in the course of several meetings with the staff of CODEL and representatives of its membership organizations, it became obvious that a most worthwhile project could be established by a close cooperation between the Ministry of Health, the Muhimbili Medical Centre, CODEL and Prof. Henschke. The present proposal is thus the result of many meetings and discussions from May, 1976 through June, 1977.

### 3. PROJECT ANALYSIS

- 3.1 Economic Effects: The economic effects of cancer prevention and treatment have been studied for the USA in several papers of the National Cancer Institutes and it has been shown, that the benefits of cancer management are the greater, the younger the cancer patients are and the more curable the cancer is. Since the average age of cancer patients in Tanzania is lower than in the USA and the most frequent cancers in Tanzania (uterus cancer and skin cancer) are much more curable than the most frequent cancer in the USA (lung cancer), the economic benefit of cancer control in Tanzania are expected to be much larger than in the USA. The modern cancer management planned by the Oncology Service should also greatly reduce the time patients spend in the Hospitals, clearly a factor of major economical importance.
- 3.2 Technology: The technology to be used in connection with the work of the Oncology Service and in particular with its radiotherapy section is one, which can be adequately handled by the Tanzanian staff after proper training. Proof of this statement is the satisfactory performance of the cobalt machine during the last 4 years, with a minimum amount of foreign assistance, by the Tanzanian technologists. The new equipment to be introduced in the future will be equally simple to maintain and to operate.
- 3.3 Sociocultural Factors: A Cancer Service is an obvious necessity and its value can only be disputed by those not familiar with the cancer problem in Tanzania. It is not only for the patient but also for the physician an exceedingly frustrating situation to have nothing to offer to a cancer patient, when they know, that effective treatment is available in other countries. In the period, when no radiotherapy was available due to the lack of an expatriate radiotherapist, there were bitter complaints from many quarters. This also has been the experience in other countries, who experienced the same unfortunate situation. A well run Oncology Service will therefore be a major factor in improving the image of medicine in Tanzania and of increasing the confidence in the Tanzanian Health Delivery System. The proposed project will be of special benefit for women of the poorest majority, because (1) uterus cancer is the most frequent cancer in Tanzania, accounting for about 20%, (2) uterus cancer is most frequent in poorer women and in mothers with many young children and (3) uterus cancer is one of the cancers, which can be completely prevented, can be detected early and can be cured in more than half of all patients.
- 3.4 Relationship to Other Considerations in the Guidelines Governing Funding for Private and Voluntary Organizations in Connection with Development Assistance Under the Foreign Assistance Program: The proposed project has a direct and immediate impact upon patients who constitute the poorest majority, because in contrast to richer people, the poor have no opportunity to obtain cancer care in other countries. The major beneficiaries will be poor women with many children for the reasons given above.

- 3.4.1 It is planned to establish special relations with other CODEL programs by working closely with the hospitals, which are supported by CODEL members. Pilot programs will be set up in the CODEL membership hospitals, which have the greatest need for better cancer service. A tie-in will also be sought with the Hanang District Village Health Project, which might offer the possibility to study the cancer problem in one district in detail and to test methods for prevention and detection on the village level. Cooperation will also be sought with the US AID Tanzania Maternal/Child Health (MCH) training project and the Adult Education Program, through which cancer prevention, detection and public education could be taught as well as with the operation "Bootstrap," established by Pastor Simonson in the Arusha area.
- 3.4.2 The project will be of benefit to larger and larger number of people, as more and more Tanzanians are trained in the cancer field. Cancer prevention will be taught to more and more people in Tanzania and should in time have a major impact, because probably as many as 2/3 of all cancers found in Tanzania are preventable.
- 3.4.3 The project can be expanded on a wide scale largely with domestic resources, since the major investment will be in personnel. The cancer field also should offer valuable job opportunities to Tanzanians. A special effort will be made to attract women to the cancer field.
- 3.5 Institutionalization with Domestic Resources: By the time donor support terminates, the trained staff of the Tanzanian physicians and allied health personnel will be able to run all cancer services in Tanzania. The project is already formally institutionalized as a separate University and Hospital Service and a nucleus of capable Tanzanian physicians and technologists have been assigned by the manpower section of the Ministry of Health. Since the project has been specifically requested by the Ministry and the University and is fully supported by both, there is no doubt that the proposed activity will be institutionalized with domestic resources once donor support ends.
- 3.6 Role of Howard University: Howard University has provided until now the major support for this project by permitting personnel from the Department of Radiotherapy to spend time in Tanzania. The Dean of the College of Medicine of Howard University, Prof. Dr. Marion Mann has inspected the cancer assistance program in Tanzania in May, 1976 and the Vice President for Health Affairs, Dr. Carlton P. Alexis in November, 1976. Both were highly satisfied with the program and have encouraged it in every way, as may be seen from the letter of the Dean shown in Appendix 8. The President of Howard University, Dr. James Cheek also supports the program fully; his younger brother, Dr. Albert Cheek was the first resident radiotherapist in Dar-es-Salaam under this program.

While Professor Henschke in the past year has been able to keep the program going with only short visits, the greatly expanded program of cancer control proposed in this project would necessitate his presence in Tanzania during a major part of the year. His dual position as Chairman and Professor at Howard University and as Chairman of the Oncology Service at the University of Dar-es-Salaam are expected to be of great value for both institutions.

- 3.7. Role of the World Health Organization: Throughout the project preparation, Prof. Henschke has kept in close contact with the World Health Organization in Geneva, which he visited in September, 1976, November, 1976 and April, 1977. He also made a special visit to the International Agency for Cancer Research in Lyon, France in September, 1976. This agency concentrates on cancer epidemiology and prevention and is related to WHO.

The proposed project has the full approval of WHO. However, due to its present financial difficulties, WHO is not able to provide a major financial contribution to the project. Dr. Garin, the Chief of the Cancer Unit at WHO, has, however, promised a token contribution of \$3,000.- which he wants to see spent on attempts to improve the treatment of skin cancers in Africa.

#### 4. PROJECT DESIGN AND IMPLEMENTATION

4.1 Implementation Plan: The implementation of the program will be carried out in close cooperation with all agencies, which were involved in the development of the proposed cancer control program (see Appendix 11), such as the Ministry of Health, the Medical Faculty of the University of Dar-es-Salaam, the Muhimbili Medical Centre, the Christian Medical Board of Tanzania, the Christian Council of Tanzania, the Catholic Secretariat of the Episcopal Conference, the World Health Organization, the International Agency for Cancer Research and the American Cancer Society.

4.1.1 Carrying out of the Project: The project will be carried out through the Oncology Service of the Muhimbili Medical Centre. Its Chief is Dr. Ulrich K. Henschke, he also holds an appointment as Professor of Oncology in the Faculty of Medicine of the University of Dar-es-Salaam (see Appendix 2, paragraph 5). Prof. Henschke will conduct the program by obtaining the advice and consent of the Ministry of Health, of the Muhimbili Medical Centre and of the Christian Medical Board of Tanzania. The latter is located close to the Muhimbili Medical Centre which will facilitate frequent consultations between Dr. Jean Craven, the Secretary of the Christian Medical Board of Tanzania and the staff of the Oncology Service of the Muhimbili Medical Centre. Dr. Craven has a special interest in cancer management since she was for many years on the staff of the Mvumi Mission Hospital in Dodoma, the seat of the new Tanzanian capital. Dr. Craven pointed out the high incidence and mortality from liver cancer in the Dodoma region and one of the first projects under this grant will be a detailed study of the cancer situation in Dodoma.

The Oncology Service of the Muhimbili Medical Centre has already good contact with many of the physicians in Government and Mission Hospitals who refer cancer patients for treatment. These contacts provide an excellent basis for the establishment of the Cancer Control Program outside of Dar-es-Salaam. The Christian Medical Board of Tanzania will play the major role in arranging contacts and guidance for the cooperation with Mission Hospitals.

- 4.1.2 Provision for Technical Assistance: CODEL will provide technical assistance mainly through the project director. Additional technical assistance will be secured from the Colleges of Engineering, Physics and Biology of the University of Dar-es-Salaam. Expatriate consultants will also be used on occasion. It is further planned to organize a volunteer organization for the support of the cancer program in Tanzania modeled along the lines of the American Cancer Society and the League Contre Le Cancer in Haiti. The latter has been most effective in the operation and financial support of the Cancer Assistance Program in Haiti, which was carried out by Dr. Henschke in the last ten years. Contribution of special equipment is expected from US and European hospitals, physicians and manufacturers.
- 4.1.3 Basic Assumptions: The basic assumptions about the availability and PVO management of resources is that the University of Dar-es-Salaam and the Ministry of Health will continue to support the Oncology Service and expand the cancer program in Tanzania. This support seems to be assured since the program was initiated in response to the specific request of the Tanzanian authorities and is planned exactly according to the needs and wishes of the Tanzanian government.
- 4.1.4 Proposed Disbursement and Procurement Procedures and Related Controls: CODEL will disburse all salaries and all travel and transportation expenses between the USA and Tanzania. The payments of equipment and supplies bought in Tanzania and of travel inside of Tanzania will be made from funds given by CODEL to the Oncology Service. For overall control of the expenditures, the budget of the Oncology Service as well as the actual disbursements of this service will be made available to CODEL annually. CODEL will also keep an account of all contributions made in cash and of donations of equipment and services originating from outside of Tanzania, besides the grants of US AID.
- 4.1.5 Schedule of Actions, Timing and Interrelationship: A pilot cancer control assistance program to Tanzania is in operation at the present time. It is supported by the Tanzanian government, by Howard University, by private contributions and by CODEL. It is hoped that the support of this program by AID will become available on October 1, 1977.
- 4.1.6 Monitoring of the Implementation Plan by the PVO: The status and the progress of the OPG will be monitored by CODEL by (1) Annual written reports, (2) Visits of the project director to CODEL at least two times a year, (3) Annual statements from the Tanzanian authorities about the project, (4) Reports by the director of the Christian Medical Board of Tanzania in Dar-es-Salaam (Dr. Jean Craven), and (5) Monitoring of the project by the US AID Mission in Tanzania. All reports will be available to US AID, Washington for review.

4.1.7 Waivers of US AID Rules and Regulations: A blanket waiver is requested for travel approval in order not to delay urgent travel. For instance, a sudden trip of the project director might be required in case of a particular difficult decision on a cancer patient or in case of breakdown of equipment which needs the attention of an expert. However, the US Ambassador in Tanzania and the US AID Mission Director in Tanzania will be immediately informed of all travel under this grant. No other waivers of the AID rules and regulations are requested.

4.2 Prior Experience in Project and Related Areas: The aims and the experience of CODEL in administering Medical Projects in Africa is a matter of record with US AID/W. CODEL's capability has been greatly strengthened by the US AID Development Program Grant, which went into effect in November, 1974 and which has been extended through November, 1977 for a total amount of \$75,000. -. The major CODEL Project in Tanzania is the Hanang District Village Health Project, for which US AID is providing \$297,450.

The experience of the Project Director, whose curriculum vitae is attached as Appendix 6, in assisting developing countries in improving their cancer services is unique: In three countries, namely, Haiti, Liberia and Tanzania, Prof. Henschke has been instrumental in the establishment of the only available radiotherapy-cancer centers. In many other countries, e.g. Venezuela, South Korea, Mexico, Jamaica, Barbados, Greece and India, Prof. Henschke had contributed substantially to the improvement of the cancer services. For this work, the University of Haiti bestowed upon him a Dr. h.c. degree, the Government of Venezuela awarded him a special order and the Government of Liberia conveyed upon him its highest title and decoration. (Appendix 7).

4.3 Host Country Activity in Project Program Areas: Prior to 1972 the only cancer treatment available in Tanzania were surgical resections done by general surgeons and gynecologists. Since 1972 a cooperative program with Howard University in Radiotherapy and in Oncology has greatly contributed to improve cancer services at the Muhimbili Medical Centre. However, as noted above, due to the lack of funds, cancer management has been largely restricted to curative and palliative cancer treatment in Dar-es-Salaam. A nationwide cancer control program, as envisioned in the proposed project, has enthusiastic backing but cannot be mounted without outside financial support.

## 5. MEASUREMENT AND EVALUATION OF PROJECT ACCOMPLISHMENTS

### 5.1 Schedule of Plan Accomplishments:

Projected start of US AID, October 1, 1977  
Beginning of epidemiology studies, October 1, 1977  
Beginning of visits to government and missionary hospitals, Dec. 1, 1977  
Computerization of cancer registry for Tanzania, June 1, 1978  
Beginning of cancer prevention program, July 1, 1979  
Cancer-Radiotherapy unit in Mwanza, December 1, 1980  
Completion of special cancer training of the first 3 Tanzanian  
physicians, July 1, 1981  
Cancer-Radiotherapy unit in Moshi, December 1, 1981

### 5.2 Measurement of Project Accomplishment:

- 5.2.1 Routine Evaluations: An annual evaluation will be conducted, based on the annual reports of the Oncology Service as well as on the reports of the Tanzanian authorities, of the Christian Medical Board of Tanzania. of US AID/Tanzania, and of site visits in Tanzania.
- 5.2.2 In depth evaluation: An in depth evaluation will be conducted at midterm (. 3 years). At this time the long term future of the cancer control program will be reviewed.
- 5.2.3 Joint evaluation: All annual evaluations will be joint evaluation of all organizations listed above under routine evaluations.
- 5.2.4 Evaluation/Design Elements: See logical framework.

## 6. FINANCIAL PLAN

The budget is submitted for five years starting October 1st, 1977. The pilot phase, in operation since May, 1976, has been supported by the Tanzanian government, by Howard University, by private contributions and by CODEL.

6.1 Budget Breakdown: As specified in the Procedural and Format Guidelines of September, 1976, a budget breakdown into the prescribed component is provided and the sources of the funds in each major components are identified in the budget.

6.1.1 Personnel Costs: All personnel except the project director and the consultants will be Tanzanians. Consultants will receive travel expenses only. The salary of the project director, Professor Henschke, whose curriculum vitae is attached as Appendix 6, will be provided by the Department of Radiotherapy of Howard University.

6.1.2 Training Costs: For the training of physicians, technologists and allied scientists, a substantial amount is requested from US AID. Except for the training of one physician at a time in the USA, the training will be conducted in Tanzania. A special effort will be made to assure that Tanzania does not lose the services of any of these trainees. A school of oncology technology will be established as soon as feasible.

6.1.3 Commodity Costs: The automobiles are requested, since 2-3 members of the Oncology Service are expected to be constantly on the move in the rural areas of Tanzania for cancer surveys and teaching. The building additions required in Dar-es-Salaam, the building modifications required in Mwanza and a new cancer wing in Moshi are expected to be financed in part by the Tanzanian government and in part by the charitable organizations which are connected with the respective hospitals.

6.1.4 Other Costs: The major component of the other costs are the air fares, the per diem reimbursements and the other costs of transportation.

Of the overhead costs in the amount of 15%, 10% will be contributed by CODEL, and only 5% of the total US AID funds are requested from US AID for overhead.

7. CONDITIONS

7.1 Evidence that the project's requirements for supportive resources other than requested of AID will be available: Evidence for the availability of Tanzanian funds are the commitments of the Minister of Health and of the Muhimbili Medical Centre of Dar-es-Salaam expressed in the memos and letters in Appendix 1 and 3. The full support of the Tanzanian Christian Organization is documented in Appendix 3 - 5.

7.2 Explicit evidence of approval of the proposed project by the host country government: The explicit approval of the proposed project by the host country government is contained in the memos and letters in Appendix 1 and 3. The point of reference in the host government are: (1) Ministry of Health, (Minister: The Honorable Dr. L. Stirling), (2) Muhimbili Medical Centre, (Director: Professor A. M. Nhonoli).

8. STATUTORY CONSIDERATIONS

Section 611 of the Foreign Assistance Act as amended, is applicable because US AID is asked to obligate in excess of \$100,000. It is believed that this is satisfied by providing a reasonable estimate of the cost to the United States in the attached budget.

	Source of Funds <sup>1)</sup>	1977-1978	1978-1979	1979-1980	1980-1981	1981-1982	All Five Years
<b>PERSONNEL:</b>							
Project Director	HU	28,750	30,188	31,697	33,282	34,946	158,863
MMC Physicians	MMC	10,000	10,500	11,025	11,576	12,155	55,256
MMC Other Personnel	MMC	3,300	3,465	3,638	3,820	4,011	18,234
<b>TRAINING:</b>							
Training in U.S. A.	AID	18,700	19,635	20,618	21,648	22,730	103,331
Training in Tanzania	AID	22,000	23,100	24,255	25,468	26,741	121,564
<b>COMMODITY COSTS:</b>							
Training Materials	AID	2,000	3,000	4,000	4,000	4,000	17,000
Equipment	AID	6,000	6,900	7,900	9,100	9,900	39,800
Construction	AID	3,000	3,500	3,500	4,000	4,200	18,200
Supplies	AID	2,000	2,100	2,200	2,300	2,400	11,000
Supplies	MMC	1,800	1,800	1,800	1,800	1,800	9,000
Automobile	AID	8,000	12,000	8,000	13,000	9,000	50,000
<b>OTHER COSTS:</b>							
Travel expenses <sup>2)</sup> including air fares	AID	10,000	12,000	14,400	17,280	20,736	74,417
Transport Equipment	AID	2,000	2,200	2,430	2,662	2,928	12,220
Contingencies		3,000	3,000	3,000	3,000	3,000	15,000
<b>OVERHEAD</b>							
(15% US AID Funds)	CODEL	12,055	13,339	13,846	15,249	15,855	70,388
	AID	6,028	6,669	6,923	7,647	7,927	35,194
<b>TOTAL</b>		<b>138,633</b>	<b>153,396</b>	<b>159,232</b>	<b>175,877</b>	<b>182,330</b>	<b>809,468</b>

1)

SUMMARY OF SOURCES OF FUNDS:	1. AID (US Agency for International Development)	497,726 = 61.5%
	2. HU (Howard University, Washington, D.C.)	158,863 = 19.6%
	3. MMC (Muhimbili Medical Centre, Tanzania)	82,490 = 10.2%
	4. CODEL (Coordination in Development, Inc., N.Y.)	70,389 = 8.7%
		<u>Total \$809,468 = 100%</u>

The contributions in Tanzania shillings are converted in this budget to dollars by dividing by 8.3

2, Travel expenses include per diem reimbursement for consultants traveling to and from and in Tanzania. No other payments will be made to consultants.

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Project Title & Number: CANCER CONTROL FOR TANZANIA

Life of Project  
From FY 1978 to FY 1982  
Total U.S. Funding (\$ years) \$517,120  
Date Prepared June 20, 1977

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS																																																						
<p>Program or Sector Goal: The broader objective to which the project contributes:</p> <p>To establish a viable Cancer Control Program, which effectively contributes to the health of the Tanzanian people.</p>	<p>Measures of Goal Achievements:</p> <p>Number and competence of Tanzanian cancer experts and of the effectiveness of the cancer control program by comparison with the cancer control in other developing and in developed countries.</p>	<p>Midterm and end of the project evaluation by a group consisting of Tanzania officials, AID officers, local representatives of the voluntary agencies, foreign cancer experts and CODEL.</p>	<p>Assumptions for achieving goal targets:</p> <p>Continued improvement of all health services in Tanzania.</p>																																																						
<p>Project Purpose:</p> <ol style="list-style-type: none"> <li>To survey cancer in Tanzania.</li> <li>To train Tanzanian Ca experts.</li> <li>To carry out cancer research.</li> <li>To advise on cancer prevention.</li> <li>To promote cancer detection.</li> <li>To organize an effective network for cancer control in Tanzania.</li> </ol>	<p>Conditions that will indicate purpose has been achieved:</p> <ol style="list-style-type: none"> <li>Periodic cancer surveys.</li> <li>Number of Tanzanians trained.</li> <li>Satisfactory studies, reports and publication.</li> <li>Meaningful communications on prevention.</li> <li>Increased number of early diagnosis.</li> <li>Increased number of patients referred for advice, treatment, rehabilitation and follow up.</li> </ol>	<p>Annual expert evaluation of the quality of the cancer surveys and of the training of Tanzanian physicians, scientists and technologists. Also evaluation by experts of the quality of the research and of the progress in cancer prevention, detection and in the establishment of a cancer control network.</p>	<p>Assumptions for achieving purposes:</p> <p>Continued political and economical stability in Tanzania.</p>																																																						
<p>Outputs:</p> <ol style="list-style-type: none"> <li>Cancer surveys</li> <li>Physicians in training</li> <li>Physicians fully trained</li> <li>Allied scientists in training</li> <li>Allied scientists fully trained</li> <li>Technologists in training</li> <li>Technologists fully trained</li> <li>Prevention/Detection Kits</li> </ol>	<p>Magnitude of Outputs:</p> <table border="1"> <thead> <tr> <th></th> <th>1978</th> <th>1979</th> <th>1980</th> <th>1981</th> <th>1982</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>3</td> <td>3</td> <td>4</td> <td>3</td> <td>2</td> </tr> <tr> <td>3</td> <td>-</td> <td>-</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>4</td> <td>1</td> <td>1</td> <td>2</td> <td>2</td> <td>3</td> </tr> <tr> <td>5</td> <td>-</td> <td>-</td> <td>1</td> <td>2</td> <td>2</td> </tr> <tr> <td>6</td> <td>2</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> </tr> <tr> <td>7</td> <td>2</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> <tr> <td>8</td> <td>-</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>		1978	1979	1980	1981	1982	1	1	1	1	1	1	2	3	3	4	3	2	3	-	-	1	2	3	4	1	1	2	2	3	5	-	-	1	2	2	6	2	2	4	6	8	7	2	4	4	4	4	8	-	1	1	1	1	<p>Yearly assessment of the quality of cancer surveys conducted in Tanzania, of the number of physicians, scientists and technologists in training or fully trained, of the educational material prepared for cancer prevention and detection and of the number of oncology subcenters established outside of Dar-es-Salaam.</p>	<p>Assumptions for achieving outputs:</p> <p>Continued support of the project by the Ministry of Health, the Muhimbili Medical Centre and the University of Dar-es-Salaam, and the availability of US AID.</p>
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<p>Input:</p> <ol style="list-style-type: none"> <li>Project Director</li> <li>Consultants</li> <li>Funds for training</li> <li>Funds for equipment</li> <li>Funds for construction</li> <li>Funds for supplies</li> <li>Funds for transportation</li> </ol>	<p>Implementation target:</p> <table border="1"> <thead> <tr> <th></th> <th>1</th> <th>1</th> <th>1</th> <th>1</th> <th>1</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>3</td> <td>\$ 44,700</td> <td>46,935</td> <td>49,202</td> <td>51,746</td> <td>54,333</td> </tr> <tr> <td>4</td> <td>\$ 16,000</td> <td>21,000</td> <td>18,000</td> <td>24,000</td> <td>21,000</td> </tr> <tr> <td>5</td> <td>\$ 7,200</td> <td>8,500</td> <td>9,500</td> <td>11,000</td> <td>12,000</td> </tr> <tr> <td>6</td> <td>\$ 3,800</td> <td>3,900</td> <td>4,000</td> <td>4,100</td> <td>4,200</td> </tr> <tr> <td>7</td> <td>\$ 12,000</td> <td>14,200</td> <td>16,030</td> <td>19,542</td> <td>23,464</td> </tr> </tbody> </table>		1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	\$ 44,700	46,935	49,202	51,746	54,333	4	\$ 16,000	21,000	18,000	24,000	21,000	5	\$ 7,200	8,500	9,500	11,000	12,000	6	\$ 3,800	3,900	4,000	4,100	4,200	7	\$ 12,000	14,200	16,030	19,542	23,464	<p>Yearly accounting of the time, the project directors spent on the project, of the number of consultants and their activities and of the expenses for training and equipment, building additions, supplies and transportation.</p>	<p>Assumptions for providing inputs:</p> <p>Availability of US AID</p>						
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3	\$ 44,700	46,935	49,202	51,746	54,333																																																				
4	\$ 16,000	21,000	18,000	24,000	21,000																																																				
5	\$ 7,200	8,500	9,500	11,000	12,000																																																				
6	\$ 3,800	3,900	4,000	4,100	4,200																																																				
7	\$ 12,000	14,200	16,030	19,542	23,464																																																				

## LIST OF APPENDICES

- Appendix
1. Endorsement of the Minister of Health, Dr. L. Stirling of 15th March, 1977.
  2. Endorsement of the Director of the Muhimbili Medical Center, Professor A.M. Nhonoli of 18th February, 1977. (Professor Nhonoli is also the Dean of the Medical Faculty of the University of Dar-es-Salaam).
  3. Endorsement of Dr. I. F. A. Craven, Secretary of the Christian Medical Board of Tanzania of 19th February, 1977.
  4. Endorsement of Mr. Stanford A. Shauri, General Secretary of the Christian Council of Tanzania in his letter to Father Powell, Director of the Africa Committee of the National Council of Churches in the United States of America, of 22nd February, 1977.
  5. Endorsement of Mr. P. B. Hando, Medical Secretary of the Catholic Secretariat of the Tanzania Episcopal Conference of 23rd February, 1977.
  6. Curriculum Vitae Professor Dr. Ulrich K. Henschke
  7. Citation of the President of Liberia Admitting Dr. Ulrich K. Henschke into the Liberian Humane Order of African Redemption with the Grade of Knight Grand Commander of May 11, 1976.
  8. Endorsement of Prof. Henschke's efforts in behalf of Tanzania by the Prof. Dr. M. Mann, Dean of the College of Medicine of Howard University, Washington, D.C. of July 29, 1976.
  9. Certification of the Muhimbili Medical Centre re contribution to the Program "Cancer Control in Tanzania."
  10. Short Curricula Vitae of Tanzanian physicians selected by the Ministry of Health and the Muhimbili Medical Center (MMC) for training in Oncology.
  11. Agencies and persons contacted in the preparation of the project, "Cancer Control for Tanzania.
  12. Minutes of the meeting on "Radiation-Oncology Programme" in the Ministry of Health in Dar-es-Salaam on September 9, 1976.

JAMHURI YA MUUNGANO WA TANZANIA  
WIZARA YA AFYA NA USTAWI WA JAMII

9083

Anwani ya Simu: "AFYA", DAR ES SALAAM.  
Simu ya Mdomo: 20261.

Barua zote ziandikwe kwa Katibu Mkuu.  
Unapojibu tafadhali taja:

HEC.528/18

Kumbukumbu Nambari .....



SANDUKU LA POSTA 9121,  
DAR ES SALAAM.

15th March, 1977

Dr. James MacCracken,  
Executive Director,  
Coordination in Development, Inc.  
79 Madison Ave.,  
New York, N.Y. 10016

Dear Dr. MacCracken,

By this letter I wish to endorse the Operational Project Grant Application "Cancer Control in Tanzania", which your organization is planning to submit to the United States Agency for International Development in Washington.

This Ministry is committed to a special effort in cancer control, because cancer is a serious health problem even in Tanzania and not least in the rural areas. Our two most frequent cancers are cancer of the lower leg (skin) and cancer of the uterine cervix. According to Anderson (Acta Tropica 27,208-218,1970), they account for about half of all cancers in Tanzania. As Professor Henschke has pointed out, these two cancers are preventable with relatively simple measures, but due to the lack of funds, a comprehensive cancer control programme has not been possible. We clearly would welcome outside support for this important aspect of our health programme.

The details of the proposal "Cancer Control in Tanzania" are the results of extensive discussions and planning between Professor Henschke and Tanzanian official and medical experts. The proposal has the complete and enthusiastic backing of the Ministry of Health and the the Government as a whole.

Professor Henschke has provided the Ministry of Health with assistance in the cancer field since 1968 and very much appreciate his efforts. Without his help, we should still have to send many cancer patients abroad at great expense. His expertise has greatly contributed to the development of Oncology at the Muhimbili Hospital. His position as project director gives us the assurance that this project will be carried out speedily and efficiently for the benefit of our people.

THE UNITED REPUBLIC OF TANZANIA  
**MUHIMBILI MEDICAL CENTRE**  
 Incorporating the Faculty of Medicine, University of Dar es Salaam

Telegrams: "Muhimbili", Dar es Salaam.  
 Telephone: 26211.  
 In reply please quote:

P.O. Box 20500,  
 DAR ES SALAAM.

Ref. No. ....

TO WHOM IT MAY CONCERN

In connection with the Operational Grant Application  
 to USAID "Cancer Control in Tanzania", I hereby confirm, that

1. The project has been developed in close cooperation with the staff of the Muhimbili Medical Centre and has the wholehearted support of the Faculty and of the Director.
2. The project is already fully integrated into the clinical and academic structure of the Muhimbili Medical Centre and of the University of Dar es Salaam
3. The project receives substantial financial support at present in form of the salaries of two technologists and one nursing assistant, and housing for two expatriate physicians and that this support is expected to increase in the near future.
4. The project will be continued with funds from the Muhimbili Medical Centre, when the USAID support ceases.
5. Professor Henschke holds the rank of Professor in the Faculty of Medicine of the University of Dar es Salaam and is the Chief of the Oncology Service of the newly created Department of Radiology and Oncology.



Professor A. M. Nhonoli  
 DIRECTOR

18th February 1977  
 Dar es Salaam

## CHRISTIAN MEDICAL BOARD OF TANZANIA

P. O. Box 9433, DAR ES SALAAM TANZANIA

Telephone 27720

St. Alban's Church Rectory  
Opposite Hotel Mawenzi  
Upanga Road

Our Ref. 15.7/141/77.

Your Ref.

Date.....19th February, 1977.

Codel Inc.  
79 Madison Ave.  
New York, N.Y.

Dear Ms. Wagner,

I have reviewed the draft to your proposal for an Operational Program Grant to US AID "Cancer Control in Tanzania", with great interest and have discussed the project several times with Professor Henschke. From my own experience at the Mvumi Hospital in Dodoma, I know that cancer is frequent in Tanzania and that it presents a difficult and heartbreaking problem to the patients and the medical staff of the V.A. hospitals in Tanzania.

The proposal developed by Professor Henschke in close cooperation with the Ministry of Health, and staff of the Faculty of Medicine and the Muhimbili Medical Centre appears as a well planned, systematic attack on the cancer problem in Tanzania.

Professor Henschke is a world renowned authority on cancer and has most successfully assisted other developing countries in organizing cancer programs.

I am in full agreement with his emphasis on training of the Tanzania staff and on cancer research, prevention and education, I also believe that this program would be of great value to the staff of our V.A. medical units.

I, therefore, endorse this project fully and without reservations.

Yours sincerely,



(DR) J.F.A. CRAVEN  
Secretary: C.M.B.T.

CHRISTIAN COUNCIL OF TANZANIA, P. O. Box 2527, DAR ES SALAAM

1/1210

22nd February, 1977

Mr. Robert S.S. Powell,  
Director, Africa Committee,  
National Council of Churches in  
the United States of America,  
Division of Overseas Ministries,  
475 Riverside Drive,  
New York, N.Y. 10027,

Dear Rob,

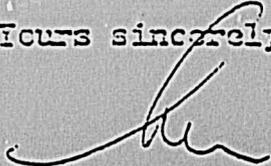
Thank you very much for your letter of 24th January, 1977  
in which you apprised me of the visit of Professor  
Hanschke.

Professor Hanschke came to my office twice and familiar-  
ized me with the proposal for "Cancer Control in Tanzania."  
He also had several discussions with Dr. Craven and you  
will receive a separate letter on her evaluation of the  
project.

I am very much in favour of this project because cancer  
occurs so often in Tanzania and is the most feared disease.  
It would be a great accomplishment, if an effective cancer  
control programme could be instituted. I like especially  
the emphasis in this project on prevention and on the  
assistance to our V.A. hospitals.

Professor Hanschke with his many years of experience in  
Tanzania is familiar with our conditions and problems  
and enjoys the full confidence and support of the Ministry  
of Health and of the Medical Faculty of the University of  
Dar es Salaam. I believe, therefore, that the project  
will bear fruit quickly and I support it completely and  
with great hopes.

Yours sincerely,



Stanford A. Shauri  
General Secretary

cc: Coltel Inc. New York




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**CATHOLIC SECRETARIAT**


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TANZANIA EPISCOPAL CONFERENCE

P. O. Box 2133  
 Phone No. 20340 & 20477  
 Tel. Address: EPICON,  
 DAR ES SALAAM,  
 TANZANIA.

MEDICAL

Department:

3.2/14

Reference:

23rd February, 1977

Rev. Fr. Patrick Cullen, S.P.S.,  
 Coordinator for Africa,  
 CODEL Inc.,  
 79 Madison Avenue,  
 New York, N.Y. 10016,  
U.S.A.

Dear Father Cullen,

Re: Cancer Control Programme in Tanzania

Prof. Henschke gave me copies of the proposal "Cancer Control in Tanzania" and met with me twice this month to discuss details and to ask my advice on how to cooperate most effectively with our Church hospitals in this programme.

There is no question that this project would be of great benefit to the people of Tanzania and that it would help our Church hospitals to provide better care to the many patients in Tanzania who suffer from this dreadful disease.

Prof. Henschke has already established a lot of contact with our Church hospitals since two thirds of all the cancer patients which are referred to him come from hospitals out of Dar es Salaam. If this project is approved, Prof. Henschke plans to communicate regularly with all the Church hospitals with special emphasis on education and prevention of cancer and visit as many of our hospitals as possible.

Prof. Henschke is highly respected in Tanzania and has already done much to improve cancer services in Tanzania. The funds which this project would provide would make it possible to institute an outstanding Cancer Control Programme, which would be of special benefit to our poor people in the rural areas, and would provide a model for many other countries. Our office fully supports this project for CODEL's assistance.

I regret that I was on safari when you visited our offices in Dar es Salaam last time, however I hope and look forward to meet you personally when you visit Tanzania again.

With kindest regards, I remain,

Sincerely yours,



P.B. Hando  
MEDICAL SECRETARY

PBH/ok.

TO: DIRECTOR GENERAL OF HEALTH SERVICES  
FROM: MEDICAL SECRETARY OF THE MINISTRY OF HEALTH

RE: [Illegible subject line]

DATE:

TO: DIRECTOR GENERAL OF HEALTH SERVICES  
FROM: MEDICAL SECRETARY OF THE MINISTRY OF HEALTH  
SUBJECT: [Illegible subject line]

1974 SEPTEMBER 11



MINISTRY OF HEALTH

MEDICAL SECRETARY

1. DIRECTOR GENERAL OF HEALTH SERVICES  
2. DEPUTY DIRECTOR GENERAL OF HEALTH SERVICES  
3. CHIEF OF BUREAU OF HEALTH SERVICES  
4. CHIEF OF BUREAU OF HEALTH SERVICES  
5. CHIEF OF BUREAU OF HEALTH SERVICES

CURRICULUM VITAE

Ulrich K. Henschke

- Education: University of Berlin, Ph. D. (Physics), November 15, 1937  
 University of Berlin Medical School, M. D., October 1, 1939  
 University of Berlin, Dr. med. habil., June 25, 1940
- Previous Appointments: University of Berlin, Germany, November, 1937 - March, 1942  
 University of Munich, Germany, February, 1942 - October, 1945  
 Aero Medical Laboratory, Dayton, Ohio, November, 1945 - March, 1955  
 Ohio State University, Columbus, Ohio, April, 1952 - June, 1955  
 Cornell University, New York and Memorial Center for Cancer, New York, July, 1955 - June, 1968
- Current Appointments: Professor and Chairman, Department of Radiotherapy, Howard University, Washington, D. C., July 1, 1970 -  
 Consultant, Veterans Administration, July 1, 1971 -  
 Clinical Professor of Radiology, Georgetown University, Washington, D. C., July 22, 1974 -  
 Professor of Oncology, University of Dar-es-Salaam, September, 1976
- Board Certifications: German Board of Radiology, May 10, 1946  
 American Board of Radiology, May 29, 1955
- Honors:
1. Fellow, American College of Radiology, February 2, 1967
  2. City of New York Public Service Award, July 1, 1966
  3. A.M. Dogliotti Prize (for Development of Afterloading in Curie-therapy) 1967
  4. Distinguished Fellow, American College of Nuclear Medicine, December 31, 1973
  5. Docteur honoris cause, University of Haiti, April 6, 1972
  6. Knight Grand Commander (highest decoration of the Republic of Liberia) May 12, 1976
  7. Order of Francisco de Miranda by the Government of Venezuela, January 14, 1977
- Publications: More than one hundred publications in the field of Oncology, Radiotherapy and Aviation Medicine.
- National Societies: New York Academy of Sciences (1955)  
 Radiological Society of North America (1955)  
 American College of Radiology (1956)  
 American Radium Society (1956)  
 James Ewing Society (1958)  
 Society of Nuclear Medicine (1961)  
 American Society of Therapeutic Radiologists (1962)  
 AeroSpace Medical Association (1952)  
 Flying Physicians Association (1962)  
 Society of Preventive Oncology (1976)

THE EXECUTIVE MANSION  
OFFICE OF THE PRESIDENT  
MONROVIA, LIBERIA

CITATION OF THE PRESIDENT OF LIBERIA  
ADMITTING DR. ULRICH K. HENSCHKE INTO  
THE LIBERIAN HUMANE ORDER OF AFRICAN  
REDEMPTION WITH THE GRADE OF KNIGHT  
GRAND COMMANDER

---

Dr. Ulrich K. Henschke, M. D., Ph. D., Scientist  
and Humanitarian, Professor and Chairman, Department  
of Radiotherapy, Howard University School of Medicine:

In 1937, you were awarded the Doctorate Degree in  
Physics by the University of Berlin, and on October 1,  
1939, you obtained your M. D. Degree from the University  
of Berlin Medical School.

It is significant to note that during your study  
of physics and medicine at the University of Berlin you  
graduated in both fields with the highest possible marks  
in every one of the twenty-eight required examinations.

From 1937 to 1940, you served as Assistant to  
Professor W. Friedrich, one of the most famous pupils  
of W.C. Roentgen, the discoverer of X-rays. Your  
investigations at Friedrich's Institute for Radiation

THE EXECUTIVE MANSION  
OFFICE OF THE PRESIDENT  
MONROVIA, LIBERIA

- 2 -

Research at the University of Berlin laid the basis for the dosimetry of Radium applications. During your post-graduate medical education at the Radiation Clinic of the Charite' Hospital of the University of Berlin, you pioneered intraoperative radiation therapy of lung and stomach cancer and published manuscripts on contact X-ray therapy, rotational X-ray therapy and biological effects of ultraviolet and infrared radiations.

At the age of 27, you were appointed Director of the Radiation Institute of the Gynecological Clinic of the University of Munich, a position you held with honour for four years. Taking up residence in the United States of America thereafter, where you spent your first five years performing sophisticated bioengineering research, and in cooperation with Dr. H. Manch, you developed an artificial leg with an hydraulic system which is so widely used today. You further pioneered in that scholarly area

THE EXECUTIVE MANSION  
OFFICE OF THE PRESIDENT  
MONROVIA, LIBERIA

- 3 -

which has since become known as cybernetics and in the field of aeromedical research.

Besides engaging yourself in extensive clinical practice and intensive theoretical instruction, your other major contributions to radiotherapy are the development of Afterloading in Brachytherapy, the introduction of Iridium 192 sources for interstitial implantation, and the design of simple cobalt teletherapy machines.

You hold membership in numerous medical and scientific societies; to mention a few, the New York Academy of Sciences, the Radiological Society of the State of New York, the Society of Nuclear Medicine and the American Society of Therapeutic Radiologists.

You have also been instrumental in the establishment of modern radiotherapy facilities in Mexico, Haiti, Korea, India, Tanzania and, now, Liberia.

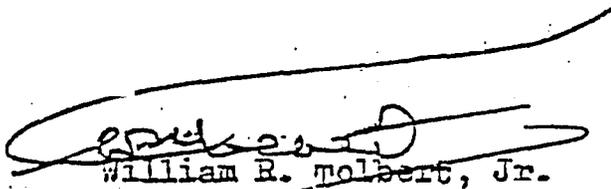
THE EXECUTIVE MANSION  
OFFICE OF THE PRESIDENT  
MONROVIA, LIBERIA

- 4 -

As a shining symbol of our recognition of all your excellent achievements, and as a tribute to your outstanding and valuable contributions to the family of man, I William R. Tolbert, Jr., President of the Republic of Liberia, by virtue of the authority in me vested do hereby admit you, Ulrich K. Henschke, into the Liberian Order of African Redemption and confer upon you the distinction of Knight Grand Commander.

Wear this Insignia with pride, dignity and honour, to the Glory of Almighty God.

Accept my congratulations!



William R. Tolbert, Jr.

May 11, 1976

HOWARD UNIVERSITY  
WASHINGTON, D. C. 20059

COLLEGE OF MEDICINE  
OFFICE OF THE DEAN

July 29, 1976

TO WHOM IT MAY CONCERN:

Dr. Ulrich K. Henschke has been on the faculty of the College of Medicine as Professor of Radiotherapy and Chairman of the Department of Radiotherapy since July, 1970. He has built up his department in these six years from a small one-technologist operation to the foremost radiotherapy installation in the metropolitan capital area and one of the best equipped radiotherapy departments in the United States. The new department incorporates many of Dr. Henschke's original ideas. Of special value have been a cobalt machine and the remote afterloader developed by Dr. Henschke, which by the simplicity of their design are most suitable for developing countries.

Dr. Henschke has taken a special interest in the training of young radiotherapists, physicists, biologists and technologists. Dr. Henschke's residency and fellowship training program was the first approved program in our area and has produced already six radiotherapists, who now occupy influential positions at major American universities. Dr. Henschke also has trained personally 4 radiophysicists and 2 radiobiologists. He has built up in cooperation with Mrs. Tabron the most active school of radiotherapy technology in our area and continues as its medical director. The school has at present 10 students, which are in great demand from other departments. Dr. Henschke has also been active in the teaching of radiation oncology to medical students in all school years.

Dr. Henschke has also been most active in establishing a comprehensive cancer program at Howard University. His efforts and reputation were an essential factor in obtaining more than 6 million dollars in grants and to secure the designation of Howard University as one of the 15 new Comprehensive Cancer Centers in the USA. Thanks to his excellent relations with his colleagues, Howard University enjoys a most productive teamwork between the surgeons, chemotherapists, pathologists and radiotherapists involved in cancer work.

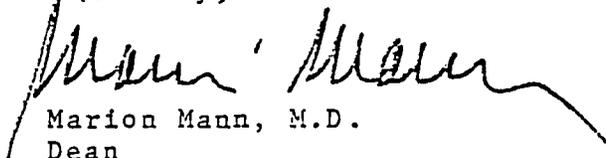
In the research sphere, Dr. Henschke has stimulated many investigations in radiotherapy and oncology. This year, for instance, seven of Dr. Henschke's papers have been accepted for presentation at major national meetings. Of special interest to Howard University has been Dr. Henschke's studies on the marked difference in cancer incidence and cancer cure rates in the black and white populations.

In addition to all his work at Howard University, Dr. Henschke has assisted other institutions in need of radiotherapy in a major way. He directed for more than a year, beginning in July, 1974, the radiotherapy division of Georgetown University, where he is also Professor of Radiology. He also directed for four months in 1971 all the radiotherapy in Jamaica, West Indies and continues to support the present Jamaican radiotherapist, Dr. Vernon Spence. In Haiti, the radiotherapy clinic and cobalt machine provided by Dr. Henschke in 1971 constitute the only radiotherapy to the 5 million people in this nation. Dr. Henschke also has been training all radiotherapy technologists for Haiti and has made frequent visits for consultation and teaching. Dr. Henschke has also provided the only cobalt radiotherapy machine in Liberia and received in May, 1976, the highest Liberian decoration for his services to that African nation.

Of special concern to Dr. Henschke has been the radiotherapy assistance program in Tanzania. The large size of this country, the nearly 15 million people and the more than 3000 new cancer cases per year provide a serious strain on the medical facilities in Tanzania. The cobalt radiotherapy machine installed by Dr. Henschke in 1972 at the Muhimbili Hospital, the principal teaching hospital in Tanzania, made modern radiotherapy available to Tanzania for the first time and has been a most welcome addition to Tanzanian medical services. However, because of the great distance between Tanzania and the USA, it is very costly to provide the services needed for continued assistance in radiotherapy and cancer management.

This statement is written in full support of Dr. Henschke's effort in behalf of Tanzania and in the hope that it will assist in attracting needed funds for this most worthwhile program.

Sincerely,

  
Marion Mann, M.D.  
Dean

## THE UNITED REPUBLIC OF TANZANIA

## MUHIMBILI MEDICAL CENTRE

Incorporating the Faculty of Medicine, University of Dar es Salaam

Telegrams: "MUHIMBILI", Dar es Salaam.

Telephone: 26211.

In reply please quote:

P.O. Box 20500,

DAR ES SALAAM.

Ref. No. ....

24th February, 1977

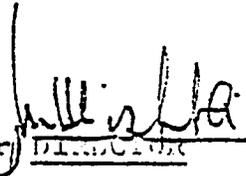
TO WHOM IT MAY CONCERN:

For use in connection with the Operational Grant Application to US AID "Cancer Control in Tanzania", I am pleased to provide the following figures for the current monthly contributions of the Muhimbili Medical Centre to the present cancer control program:

SALARY Technologist Mr. Cosmos Ndeweke TS	1420/= p.m.
Salary Technologist Mr. William Mbewe	Shs. 1420/= p.m.
Salary Nursing Assistant Josepha Profiri	Shs. 440/= p.m.
Flat for Professor Henschke and Associate	Shs. 300/= p.m.
Supplies and Services (estimated)	1,000.00

Total monthly contributions to "Cancer Control" Shs. 4580.00

MLK/PM

for   
 DIRECTOR

**Short Curricula Vitae of Tanzanian physicians selected by the Ministry of Health and the Muhimbili Medical Centre (MMC), for training in Oncology.**

1. LUANDE, Gideon Jeff

Medical Education: University of Dar-es-Salaam, 1968-1973, M.D.

Appointments: Intern, MMC, 1973-1974  
 Registrar in Surgery, MMC, 1975-1977  
 Fellow in Oncology, Howard University, 1977 -  
 Departments of Radiotherapy and  
 Cancer Research Center, Washington, D.C., U.S.A.

2. MGALA, Hans

Medical Education: Makerere University, 1966-1971, M.D.

Appointments: Intern, MMC, 1971-1972  
 Registrar in Gynecology, MMC, 1972-1977  
 Fellow in Oncology, MMC, 1977 -

3. MUINDI, Josephia R.F.

Medical Education: University of Dar-es-Salaam, 1969-1974, M.D.

Appointments: Intern, MMC, 1974-1975  
 Tutorial Assistant in Medicine, MMC, 1975-1976  
 Trainee, Royal Marsden Cancer Hospital, London, 1976 -

AGENCIES AND PERSONS CONTACTED IN THE PREPARATION OF THE PROJECT,  
"CANCER CONTROL FOR TANZANIA"

1. Ministry of Health (September, December, 1976, February and April, 1977)
  - Dr. Stirling, Minister of Health (Sept. 6, 1976, Dec., 8, 1976, Feb., 11, 1977 and Apr. 4)
  - Mr. Nyanganyi, Junior Minister of Health (December 11, 1976)
  - Dr. Mwanukuzi, Director of Hospital Services
  - Dr. Chiduo, Director of Manpower and Training
  - Dr. Tarimo, Director, Preventive Medicine
  
2. University of Dar-es-Salaam (September, December, 1976 and February and April 1977)
  - Prof. Nhonoli, Dean, Faculty of Medicine
  - Prof. Msuya, Associate Dean
  
3. Muhimbili Hospital (September, December, 1976 and February, April, 1977)
  - Prof. Nhonoli (Director)
  - Prof. Hiza (Surgery)
  - Prof. Philipps (Surgery)
  - Prof. Mtimavalye (Gynecology)
  - Prof. Lema (Hematology)
  - Prof. Mutoka (Pathology)
  - Prof. Shaba (Pathology)
  - Dr. Milikita (Radiology)
  - Miss Laiser (Matron)
  
4. Kilimanjaro Christian Medical Center (KCMC), Moshi (September, 1976)
  - Mr. Sijaona, Regional Commissioner
  - Dr. Lyimo, Medical Superintendent
  - Mr. Moshi, Administrator
  - Dr. Armon, Gynecologist
  - Dr. Dorn, Radiologist
  
5. Bugando Hill Hospital, Mwanza (December, 1976)
  - Dr. Ntuyabahiwe, Medical Superintendent,
  
6. US AID Tanzania (September, December, 1976 and February, April, 1977)
  - Dr. Johnson, Director
  - Mr. Harshbarger
  
7. US AID, Washington (November, 1976)
  - Mr. Scott
  - Dr. Cross
  - Mr. Wilson
  - Mr. Eney,
  - Mr. O'Keefe

8. World Health Organization, Geneva (September 27, November 24, 1976 and April 14, 1977)

Dr. Pavlov, Vice President  
Dr. Garin, Chief, Cancer Unit  
Dr. Seelentag, Chief Radiology Unit  
Dr. Sobin (Pathologist)  
Ms. Lunt, Cytologist

9. International Agency for Research on Cancer, Lyon, France (September 28, 1976)

Dr. Muir, Chief, Epidemiology  
Dr. Geser, Biological Carcinogenesis

10. Private and Voluntary Organizations (December, 1976 and February and April, 1977)

Christian Medical Board of Tanzania, Dar-es-Salaam (Dr. Craven)

Seventh Day Adventists, Washington and Dar-es-Salaam (Drs. Heidinger and  
Daysinger MCH)

Christian Council of Tanzania, Mr. Stanford Shauri, General Secretary

Tanzania Episcopal Conference, (Mr. P. B. Hando, Medical Secretary,  
Augustin Ndeukoyo, General Secretary)

British Medical Research Council, (Dr. Dennis Burkitt)

Copy Of The Minutes Of The Meeting On "Radiation - Oncology Programme"  
In The Ministry Of Health In Dar-es-Salaam On September 9, 1976

Radiation - Oncology Programme

Professor Ulrich K. Henschke, M. D., Ph. D., F. A. C. R., Professor and Chairman, Department of Radiotherapy, Howard University Hospital, Washington, D. C. met Dr. L. D. Stirling on 6/9/76 Minister of Health in the latter's office. Dr. P. N. Mwanukuzi Director of Hospital Services, was in attendance.

2. Professor Henschke briefed the Minister of the Radiation Oncology Programme which is based at Muhimbili Hospital, and which his department started by donating a cobalt 60 unit which he donated in 1972. This launched the treatment of cancer in Tanzania for the first time.
3. Professor Henschke reassured Dr. L. D. Stirling that he would be ready to continue this programme and develop it by providing both the necessary extra equipment as well as personnel until such time as the Ministry of Health was able to run the unit completely.
4. Professor Henschke suggested a target of 10 years during which the Ministry should train the following staff for the radiation oncology programme:
  - a. Five radiotherapist
  - b. Three medical physicist
  - c. Ten radiation technologist (i. e. radiographers-radiotherapy)
  - d. One radiobiologist
5. Professor Henschke felt that the training of all these people can be done locally at Muhimbili and he promised to undertake this if the Ministry agreed. The course would be for two years during which the trainees would spend up to six months at Howard University.
6. Until such time as the Ministry was able to produce its own radiotherapist Professor Henschke would send one radiotherapist from his Department every six months to ensure that cancer treatment continued at Muhimbili Hospital.
7. Professor Henschke suggested that sub-centres especially for the treatment of cancer of the cervix using Caesium 137 for intracavitary treatment could be provided also at KCMC and Bugando Hospital. In fact such treatment is now available on a small scale at KCMC.

8. The present cobalt 60 source which has been going on for nearly 5 years now, needs replacing, and Professor Henschke said he would himself be sending another source next December and he will come to install it himself and stay on for one month working and teaching at Muhimbili Hospital and at the Faculty of Medicine.

9. The main undertaking on the part of the Ministry that Professor Henschke requested is:-

- (1) the provision of a permanent suitable apartment preferable within the grounds of Muhimbili Hospital for the use of the radiotherapist that he will be sending.
- (2) the provision of available staff - for the training in the specialities, enumerated under 4 above.

10. Professor Henschke told the Minister that he was worried by the increase of cancer, and as a cancer treatment expert he was very keen to ensure that this programme succeeded, and he expressed the hope that the Minister would give the programme his fullest support for the benefit of his people!

11. Dr. L.D. Stirling thanked Professor Henschke for his kindness and reassured him of the unflinching support that he would get for this programme which was after all for the benefit of our own people.

This is to certify, that this is a true and correct copy of the minutes of the meeting on 9. September, 1976 in the Ministry of Health in Dar es Salaam.

 21.2.77.  
DIRECTOR  
HOSPITAL SERVICES DIVISION  
MINISTRY OF HEALTH  
DAR ES SALAAM

6210147001501

SERIAL NO. 79-5 621047(3)  
PA-MG-722-  
FI

UNCLASSIFIED

PROJECT EVALUATION SUMMARY  
(Submit to ID/PAV after each project evaluation)

1. Mission or AID/W Office Name USAID/Tanzania			2. Project Number 621-0147 6p		
3. Project Title Cancer Control for Tanzania (OPG)					
4. Key Project Dates (Fiscal Years)			5. Total U.S. Funding Life of Project		
a. Project Agreement FY 1978 Signed	b. Final Obligation FY 1982	c. Final Input FY 1982 Delivered	498,000		
6. Evaluation Number as Listed in Eval. Schedule		7. Period Covered by This Eval. From: Jan 1978 To: June 1979		8. Date of This Eval. Review May 20, 1979 Month/Day/Year	
		Month/Year	Month/Year		
9. Action Decisions Reached at Eval. Review, Including Items Needing Further Study			10. Officer or Unit Responsible for Follow-Up	11. Date Action to be Completed	
1. That CODEL submit to USAID/T in their subsequent year annual reports, detailed budgets which include monthly expenditures for all proje- ct activities.			Dr. Hena	Dec. 1979	
2. That CODEL provide USAID/T prior to the beginning of each calendar year an implementation schedule which indicates on a monthly basis the project activities to be conducted during the year and projected costs.			Dr. Hena	Dec. 1979	
3. That USAID/T check out with the proper authorities in AID/W on the possibility of additional funds for expansion of this project to include: (1) a special program to assist Albino children and (2) the design and construction of "appropriate technology" radial therapy units.			Dr. Hena	June 1979	
12. Signatures: Drafter: Robert E. Gilson Evaluation Officer			Mission or AID/W Office Director		
Signature Project Manager Jaka Harahbarger			Signature 7/13/79		

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### 13/14 SUMMARY/METHODOLOGY

The purpose of this evaluation is to review the progress of the CODEL Cancer Control Project towards achievement of project purposes stated and inherent in the project design. This CPG project got underway on 1 January 1978 with the signing of the U.S. AID grant agreement. The project will run for five years and receive AID funding in the amount of \$498,000.

The stated goal of the project is to assist the Government of Tanzania to achieve its objective of establishing a reliable Cancer Control Program, which will effectively contribute to the health of the Tanzanian people.

The purpose level objectives are: survey cancer in Tanzania (2) train Tanzanian cancer experts (3) carry out cancer research (4) advise on cancer prevention (5) promote cancer detection and (6) organize an effective network for cancer control.

In order to assess the degree and nature of progress towards achievement of the above objectives, this evaluation reviews and assesses current project status according to the structure of the logical framework in the project. Interviews with the involved parties, annual reports and the Project Paper were used to elicit the information found in this report.

In general, the evaluation revealed that satisfactory progress is being made towards achieving nearly all project outputs, purposes and the goal:

- Cancer surveys are being conducted on an annual basis by gathering, compiling, and analyzing data available through the various medical registries, government and individual hospitals and the Hanang Project. One survey (197C) has already been completed and over the five year course of the project, all these data will be evaluated and correlated to obtain more reliable data on cancer incidence and mortality in Tanzania. Even at this early date the data collected constitutes the only nationwide figures for any country in Africa.
- The training component, which involves specialized training for physicians, technologists and scientists, is well underway and in most cases ahead of schedule.
- Several research studies are being conducted which may lead to clues on the cause of common cancers in Tanzania (see attached CODEL annual report).
- Special efforts are being directed toward cancer prevention in the albino community in Dar es Salaam, and a simplified campaign, modelled on the "seven cancer signs" is being developed to improve cancer detection.
- The only shortfall this project has experienced to date has been in setting up an adequate cancer control network. This activity was hampered by recurrent cholera epidemics throughout the country and the outbreak of war with Uganda, both of which resulted in severe travel restrictions. However, now that both of these situations are under greater control, this project activity is expected to be greatly expanded.

One other matter of some concern to USAID/T in reviewing the project is the fact that CODEL's yearly expenditures are running considerably higher than anticipated. At the present rate, nearly 50% of the total budget will have been expended in 1978 and 1979. CODEL reports, however, that the higher expenditures are being required during these first two years to get the project off to a good start and for the purchase of an airplane to ease transportation problems. They assume that expenses in the subsequent years will be correspondingly smaller and that the budget developed for this project remains adequate to achieve all project objectives. This will be closely monitored and USAID/T is recommending that subsequent annual reports from CODEL include a budget which provides a monthly expenditure breakdown for each project activity.

#### 15. EXTERNAL FACTORS

As noted in the summary, cholera epidemics throughout the country in 1978 and early 1979, and the outbreak of war with Uganda caused severe travel and transport restrictions in Tanzania. These restrictions adversely affected the implementation of this project, particularly the setting up of an effective cancer control network which requires extensive travel to various parts of the country by medical personnel. As we approach mid 1979, however, both of these situations appear to be under control and expansion of this activity is expected.

#### 16. INPUTS

CODEL's expenditures over the first year and a half of project implementation are higher than anticipated due to high training costs and the purchase of a light, single-engine aircraft. CODEL reports, however, that future year spending will be lower and the remaining funds will be adequate to achieve all targeted outputs and purposes. To date, the commodities procured under this project have arrived in a reasonably timely manner. Also, three short-term consultants were hired under the project, arrived in Tanzania on schedule, and were able to contribute to the progress of the project.

The CODEL Project Director has indicated a desire to add two components to the project: (1) A special program for albino children; and (2) an appropriate technology component involving radio-therapy units. The cost of these two would run an estimated 2-500,000 US dollars. He also desires to renovate a building recently given to the project by the TanGov. As this project is already funded at the AID/OPG maximum \$500,000 limit, solicitation of contributions from other donor organizations for these project additions will be given highest priority. USAID/T will, however, check into the possibility of additional AID funding to expand this project.

#### 17. OUTPUTS

1. Cancer surveys: Since the project's inception in 1978, one cancer survey has been completed, and more than 1500 cancer cases have been registered at the Tanzania Tumor Registry. In the future, more accurate reports submitted by individual hospitals, the various registries and the Hanang Project will enable this project to produce one of the most detailed and reliable cancer registries in Africa.

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2. **Physicians in training:** Training of Tanzanian physician specialists is well on its way. Three have, or presently are, undergoing training. Dr. Luande is currently under training at Harvard University as a radiotherapist and is expected to take the American Board exam in 1979. Dr. Nganga, a gynecologist, was in training for eight months in oncology at Howard University and at the Memorial Center for Cancer and Allied Diseases in New York. He has returned and is assigned to the project. Dr. Mushi, an internist is in training at the Royal Marsden Hospital and the Chester Beatty Institute in England, and another physician, Dr. Nkoma, may be assigned to this project and sent for training at a later date - if funds are available.

3. **Physicians fully trained:** One physician completed training in 1978, the other two will complete their training in 1980. A fourth, if funds are available, will begin training in 1980 and return in 1982.

4. **Allied Scientists in training:** This training is well on schedule. One scientist is in training and will return in 1980. Two additional scientists will go for training in 1980 and return in 1982.

5. **Allied Scientists fully trained:** The first fully trained scientists will return in 1980.

6. **Technologists in training:** In 1978 and 1979 this consisted of an eight months stay at Howard University for one senior technologist and continued in-country training for three other technologists.

7. **Technologist fully trained:** By the end of 1979 it is reported that 3 technologists will be fully trained and ready to carry out new responsibilities related to the project.

8. **Prevention detection kits:** A kit specially developed to deal with skin cancer will be completed and in use by December of 1979.

## 18. PURPOSE

### 1. To survey cancer in Tanzania:

Good progress is being made toward gathering and obtaining from several sources (hospitals, dispensaries, logistics, health projects) reliable data on cancer incidence and mortality in Tanzania. This data has, and will, become increasingly important in view of the fact that the older African registries in Uganda, Mozambique and Rhodesia are currently in disarray.

### 2. To train Tanzanian cancer experts:

One physician has successfully completed training in the US and has returned to work on the project. Two physicians are still undergoing training and their return is expected in 1980. This component is well on schedule and is expected to provide the required expertise in key areas of Tanzania's cancer program.

3. To carry out cancer research:

The research being carried out under this project is limited to finding clues on the cause of common cancers in Tanzania in order to formulate strategies for prevention. (See CODEL first annual report P. 6 for further detail.)

4. To advise on cancer prevention:

The major focus to date regarding this component has been directed towards cancer prevention in the albino community in Dar es Salaam. 160 albinos have been registered and regularly attend a Sunday albino clinic.

5. To promote cancer detection:

Successful efforts are being made to test (using pap smears) young mothers who come in for prenatal examinations, to educate physician medical students and nurses on the early signs of cancer, and to mount a simplified campaign to inform the public on early cancer signs.

6. To organize an effective network for cancer control in Tanzania:

Little progress made to date due to travel restrictions caused by the war with Uganda and outbreaks of cholera.

19. GOAL

To establish a viable Cancer Control Program, which will effectively contribute to the health of the Tanzanian people.

Excellent progress is being made in nearly all project activities. As increased data is gathered and compiled; as more physicians, technologists and scientists are trained, and as research, prevention and detection activities are refined, an effective and viable Cancer Control Program will be established in Tanzania which will significantly contribute to the health of the Tanzanian people.

20. BENEFICIARIES

In the longer term, this project, by setting up a reliable program of cancer prevention, research, detection and control in Tanzania, will benefit the entire population, for which cancer like everywhere else, is the most feared disease. The program will be of special benefit for the poor since the two most frequent cancers (uterus and skin) are typical cancers of poverty. It will also be of special benefit to the albino population, particularly in Dar es Salaam, where special efforts are being made to register albinos and teach them better methods of protection.

## 21. UNPLANNED EFFECTS

This project has had an unplanned impact on the special problems of albino skin cancer. After reviewing the available 1978 survey data and assessing the chances for prevention, detection and treatment of the various types of cancer, it was determined that immediate results could be obtained with greater concentration on the special, yet very treatable, skin cancer problems of albino children. Thus, a special albino registration effort is being conducted in Dar es Salaam and Sunday clinics are being held especially for them.

If this effort is to be expanded and continued, however, additional funds will be required. AID, as well as other donor organizations, are being checked into as possible sources of funding.

## 22. LESSONS LEARNED

To date, one of the lessons learned under this project has been the need to have greater flexibility designed into projects so that for unplanned developments, such as the albino activity, the project can be readily readjusted and modified to absorb and add the new requirement.