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REGIONAL CANCER CENTRE

TRIVANDRUM-695 011, KERALA, INDIA

REPORT OF ACTIVITIES 1982 - 1983

By

Dr. M. KRISHNAN NAIR MD, FRCR.

DIRECTOR

REGIONAL CANCER CENTRE

Director :

Dr. M. KRISHNAN NAIR, MD, FRCR.

Superintendent :

Dr. T. K. PADMANABHAN, MD, DMRE

REGIONAL CANCER CENTRE, TRIVANDRUM.

I am happy to submit the IInd Annual Report (1982-83) of The Regional Cancer Centre, Trivandrum, Kerala.

Regional Cancer Centre, Trivandrum was established as part of the National Cancer Control Programme of the Government of India in August 1981. Within a short span of one and a half years, the Centre was able to update the Radio-Therapy treatment, cancer diagnosis and assessment using newer imaging techniques, establish a nucleus for basic and applied research in cancer, introduce population based cytology screening programmes and initiate cancer registration in Kerala. Education of the medical profession in modern management of cancer has been one of the activities of the centre and public awareness on cancer has been greatly enhanced by our activities. These achievements were largely due to the co-operation of the staff and the generous assistance from the Government of India and Government of Kerala. But the efforts of the centre to provide comprehensive care to cancer patients have so far been thwarted by lack of space in the present premises and attachment of staff and services to institutions whose priorities are different from those of a comprehensive cancer centre. To some extent these have been rectified by some recent decisions taken by the Government of Kerala and the administrative bodies of the Regional Cancer Centre. We hope and pray that the road will not be too long for our tiny State to achieve the objective of total Cancer Control.



Dr. M. Krishnan Nair, MD, FRCR,
Director.

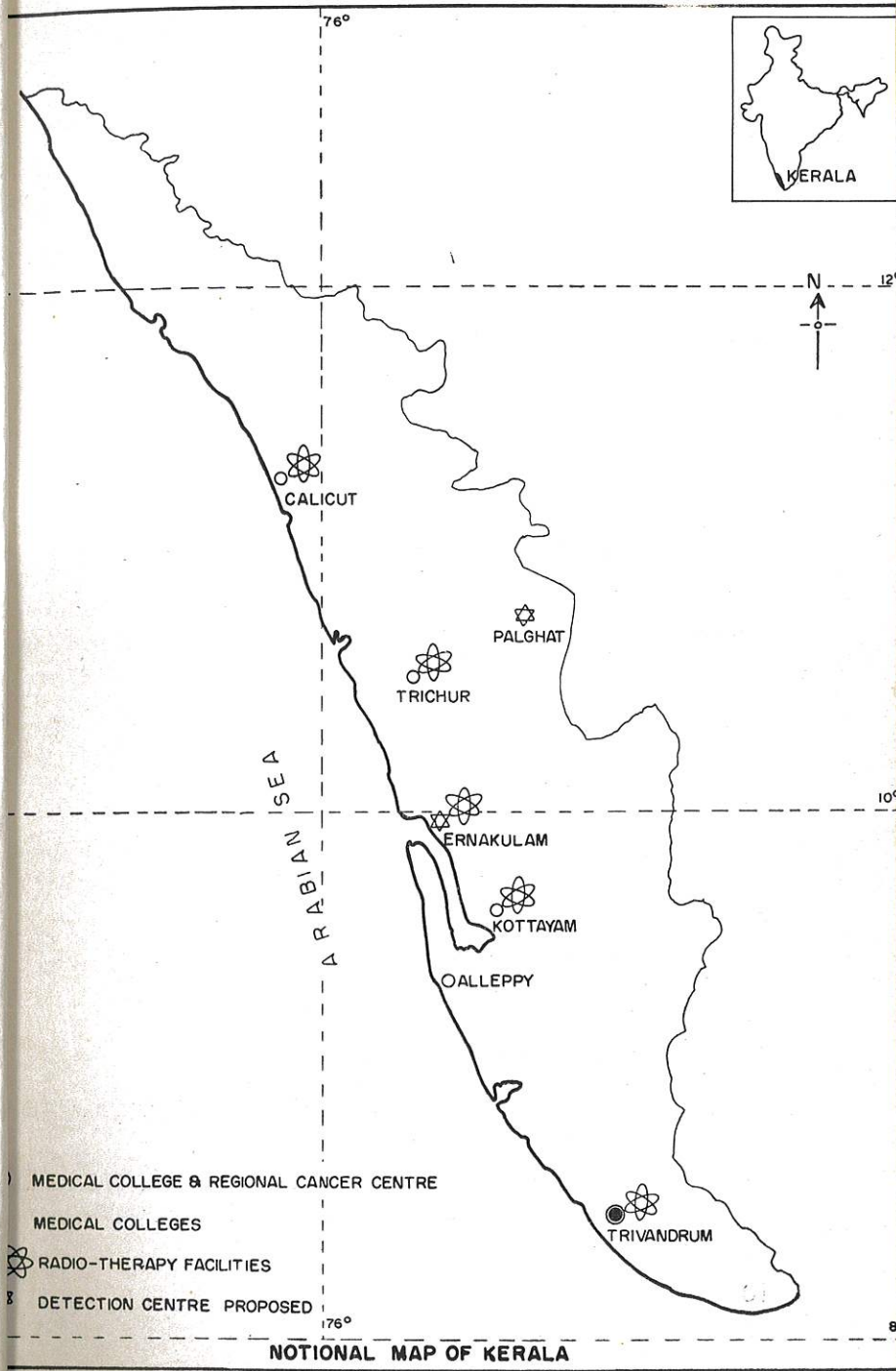
Trivandrum
10-9-1983.

Frank Ellis.
Oxford

I was very impressed
with the whole set-up, the
efficiency and the equipment
as well as by the evidence
for future progress.

F Ellis

Dr. FRANK ELLIS,
Professor at Oxford visited
The Regional Cancer Centre
in January 1983



- MEDICAL COLLEGE & REGIONAL CANCER CENTRE
- MEDICAL COLLEGES
- ⊗ RADIO-THERAPY FACILITIES
- ⊗ DETECTION CENTRE PROPOSED

KERALA AT A GLANCE

Area	38863 sq. km.
Density of Population	654 Persons sq. km.
Population (1983 Census)M	1,24,87,961
F	1,29,15,256
T	2,54,03,217

	<i>KERALA</i>	<i>INDIA</i>
Sex Ratio	1000/1034	1000/933
Birth Rate	25.5/1000	33.2/1000
Death Rate	6.4/1000	18.5/1000
Urban population	18.8%	23.3%

Literacy rate

	<i>KERALA (1981)</i>	<i>INDIA (1981)</i>
M	74.0%	46.7%
F	64.5%	24.9%
T	69.2%	36.2%

Expectation of Life at Birth

	<i>KERALA (77-79)</i>	<i>INDIA (76-81)</i>
M	63.8	52.6
F	66.9	51.6
T	65.4	52.1

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Director of Census operations, Kerala.
4. Family Welfare Programme in India Year book 1981-82.
Govt. of India, Ministry of Health and Family Welfare,
New Delhi



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REGIONAL CANCER CENTRE

Governing Body

—Minister for Health, Kerala State	..	Chairman
—Secretary, Department of Health, Kerala State	..	Vice-Chairman
—Secretary, Department of Finance, Kerala State	..	Member
—Secretary, Department of Planning, Kerala State	..	Member
—Joint Secretary (Financial Adviser) Ministry of Health & Family Welfare, Government of India	..	Member
—Joint Secretary, Ministry of Health & Family Welfare, Government of India	..	Member
—Additional Director-General (Medical) Directorate-General of Health Services, Government of India.	..	Member
—Principal, Medical College, Trivandrum	..	Member
—Senior-most Pathologist in the Medical College Service of the Kerala Government	..	Member
—Director, Regional Cancer Centre, Trivandrum	..	Convener

Executive Committee

—Secretary, Department of Health, Government of Kerala	..	Chairman
—Secretary, Department of Finance, Government of Kerala	..	Member
—Secretary, Department of Planning, Government of Kerala	..	Member
—Principal, Medical College, Trivandrum	..	Member
—Director, Regional Cancer Centre, Trivandrum	..	Convener

Scientific Committee (1983-1984)

- Dr. D.B. Bisht, MD, PhD, Director-General of Health Services, Nirman Bhawan, New Delhi, Govt. of India .. Chairman
- Dr. (Mrs) Usha K. Luthra, MD, PhD, Senior Deputy Director General, Indian Council of Medical Research New Delhi. .. Alternate Chairman
- Dr. M. Balaraman Nair, MD, Principal, Medical College, Trivandrum .. Alternate Chairman
- Dr. M. Krishnan Nair, MD, FRCR Director, Regional Cancer Centre, Trivandrum. .. Convener
- Dr. T.K. Padmanabhan, MD, Professor of Radiotherapy, Regional Cancer Centre, Trivandrum. .. Member
- Dr. J. Stephen, M.Sc, PhD, Associate Professor of Cancer Research, Regional Cancer Centre, Trivandrum .. Member
- Dr. T.P. Ramachandran, M.Sc, PhD, Associate Professor of Radiation Physics, Regional Cancer Centre, Trivandrum. .. Member
- Dr. N. Sreedevi Amma, MD, Professor of Cytology, Regional Cancer Centre, Trivandrum. .. Member
- Dr. P. Ramachandran Nair, DRM, MNAMS, Associate Professor of Nuclear Medicine (Imaging), Regional Cancer Centre, Trivandrum. .. Member
- Dr. R.S. Mani, M.Sc., PhD, Head, Radiopharmaceutical Division, Bhabha Atomic Research Centre, Bombay .. Member

— Dr. A.D. Singh, FRCR, Professor of Radiotherapy, Christian Medical College & Hospital, Vellore .. Member

— Dr.R.S. Rao, MS, Medical Superintendent & Surgeon, Tata Memorial Hospital, Bombay. .. Member

— Col. Lakshmipathy, MD, Director, Institute of Nuclear Medicine and Allied Sciences, New Delhi. .. Member

— Dr. D.M. Vasudevan, MD (on deputation) Director of Cancer Research Amala Cancer Hospital & Research Centre, Amalanagar, Trichur. .. Member

ACKNOWLEDGEMENTS

- Government of India, Ministry of Health & Family Welfare,
- Government of India, Department of Science & Technology,
- Government of Kerala, Department of Health.
- Indian Council of Medical Research, New Delhi.
- World Health Organisation, New Delhi.
- International Union Against Cancer (UICC) Geneva, Switzerland.
- British Council, Madras.
- American Cancer Society, New York.
- Japanese International Co-operation Agency, Tokyo.
- Allegheny General Hospital, Pittsburgh, U.S.A.
- Christie Hospital & Holt Radium Institute, Manchester.
- Chester Beatty Research Institute, London.
- Bhabha Atomic Research Centre, Bombay.
- Director General of Health Services, Government of India, New Delhi.
- Director, Sree Chithira Thirunal Institute for Medical Science & Technology, Trivandrum.
- Director of Health Services, Government of Kerala.
- Principal, Medical College, Trivandrum.
- Superintendent, Medical College Hospital, Trivandrum.
- Superintendent, Sree Avittom Thirunal Hospital for Women & Children, Trivandrum.
- Dean, Dental College, Trivandrum.
- Dr. Usha K. Luthra, Sr. Deputy Director General, Indian Council of Medical Research, New Delhi.
- Dr. D.J. Jussawalla, Tata Memorial Centre, Bombay.
- Dr. P.B. Desai, Director, Tata Memorial Centre, Bombay.
- Dr. V. Shanta, Director, Cancer Institute, Madras.
- Dr. R.D. Ganatra, Head, Radiation Medicine Centre, Bombay.
- Dr. M. Krishna Bhargava, Director, Kidwai Memorial Institute of Oncology, Bangalore.
- Dr. B.D. Gupta, Postgraduate Institute, Chandigarh.
- Dr. Sneh Bhargava, All India Institute of Medical Sciences, New Delhi.
- Keltron, Trivandrum.
- Controller of Stationeries, Government of Kerala, Trivandrum.

ACTIVITIES

Service to Cancer Patients continues to be the major activity at the Regional Cancer Centre. During the year under review 3626 new patients (cancer and other tumours) were registered in the outpatient department, which was 7.6% (254 patients) more than the previous year. This increased patient attendance also increased the workload of all the departments. During the year a number of new services intended to increase and improve patient care were introduced.

Patient Service Statistics

Number of New Patients registered	: 3626 ✓
Number of Inpatients	: 1941 ✓
Number of Radiotherapy cases (External + Brachy therapy)	: 4864
Number of teletherapy patients	: 4636
Number of Brachy therapy cases	: 228
Number of Chemotherapy cases	: 30/day
Number of patients investigated in Nuclear Medicine	: 2038

Training Programmes

M.D. in Radiotherapy—2 candidates every year

PhD in Immunology, Biochemistry and Cell Biology.

CRA (Certified Radiological Assistants Course)—25 Candidates yearly.

Technician – Cytology

Physicist's clinical orientation programmes—to assist Bhabha Atomic Research Centre, Bombay.

DMRT—3 candidates every year.

DEPARTMENTS

Out Patient Clinics

Out patient clinics were held on all days of the week except on Sundays and the patient attendance has been increasing rapidly. The clinics continue to be overcrowded and the need for more space and facilities is urgent. Patient services were enlarged to offer better comfort to the patient. The clinics continued to function under two unit chiefs on alternate days. The average daily clinic attendance increased from 77 in June to 90 patients per day in December 1982.

A paediatric oncology service was initiated during the year to provide specialised care to childhood cancers especially the Leukaemias and lymphomas.

At the noon clinic, held daily, important and difficult cases are presented and the therapeutic approach discussed and decided. Specialists from other services like the ENT services, plastic surgery, paediatric surgeons etc. also participate in these noon clinics regularly.

In order to systematise the patient attendance and services at the clinic, a plastic identity card is uniformly issued to all the patients registering now at the clinic. The follow-up visits of patients have been systematised and all patients are encouraged to visit the clinic on the appointed day. The dental services at the out patient clinics have been involved not only in dental extraction but takes care of dental hygiene of the needy patients. This is an important service in the hospital as almost 35% of the patients have oral/oropharyngeal cancer. This service also obtains the tissue for biopsy from all suspected oral cancer cases.

Radiotherapy Department

The number of radiotherapy cases during the year was 4864 which was 42% more than the previous year. This increase in turnover was possible largely due to increase in facilities. Subsequent to making the Medical College Hospital as a referral hospital, patients are admitted only when a bed is available in

the wards. Compared to previous years the number of inpatient admissions during the current year was thus reduced and many patients were requested to stay outside the hospital and unless the bed strength is enhanced, more patients cannot be admitted to the hospital during treatment. Treatment of cancer has been made more efficient by the increasing use of Beam Directed Treatment, Selectron after loading brachy therapy machine and also by a judicious combination of Radiotherapy, Chemotherapy and Surgery.

Regular lectures for post Graduate students in Radiotherapy, MS, MD, MBBS & CRA students were conducted at the Centre. A 4 MeV linear accelerator has been ordered at a cost of Rs. 25,00,000 which will be commissioned shortly.

Radiation Physics

Treatment Planning (for both external & brachytherapy) is routinely done by the participation of this department. Beam directed radiotherapy using plaster of Paris shells was regularly undertaken for patients needing radical treatment. During the year 225 such shells were made in the department for Beam directed treatment. Maintenance and calibration of all radiotherapy machines in the department and relevant dosimetry work was carried out by the department. A film badge monitoring service for all personnel working with radiotherapy equipments was maintained in collaboration with Bhabha Atomic Research Centre, Bombay. Periodic radiation protection surveillance surveys in and around the therapy installations have been carried out routinely.

The services of this division were also rendered to the department of Diagnostic Radiology of the Medical College for inspection and monitoring the equipments in their department.

Regular teaching and training programmes were conducted for the following categories of students.

- (a) Post Graduates in Radiotherapy and Radiodiagnosis.
- (b) Certified Radiological Assistants Courses.
- (c) Medical undergraduates.

Several research studies are underway at the division. With the support of ICMR a special research study on "The Adoption of Beam Directed Radiotherapy in the Radiation Treatment of cancers of the Head and Neck" is in progress.

It is our constant aim to improve the service to cancer patients. For better monitoring of radiation delivery and also for highly improved treatment planning, additional equipments have been ordered. They include (a) Secondary Standard Dosimeters, (b) Direct patient Dose Monitoring system—5 channel, and (c) Treatment planning system.

Nuclear Medicine

New patients registered for various isotope investigations during the year were 2038, of whom almost 90% were investigated for thyroid studies. About 15 patients also received Radioiodine therapy, for thyrotoxicosis. The services now offered by the department are :

Therapy : Radioactive iodine therapy for thyrotoxicosis.

Scanning : Thyroid, Liver, Brain.

Thyroid uptake studies.

RIA : T3, T4 is routinely done.
TSH, TG & β -HCG, R.I.A.S. are being standardised.

The following research studies undertaken by the division are supported by the Indian Council of Medical Research.

They are (a) Thyroglobulin as a biochemical marker for thyroid Cancer and (b) Thyroid function studies in Radiotherapy of Head & Neck Malignancy.

The Staff of the Nuclear Medicine Division are routinely involved in the teaching programmes. Regular lectures on Nuclear Medicine and imaging are undertaken for the benefit of Medical students, Students for Nursing and for those who have registered for Certified Radiological Assistants examination (CRA)

The CRA students have also a months posting in the department during training as part of the requirement of the course. To strengthen the patient services and the research activities of the division the following equipments have been ordered.

A. Gamma Camera

B. Ultra Sound Scanner.

These are aimed at improving the imaging capabilities at the centre and would help accurate assessment of cancer in an individual patient.

Cytology

The cytology division of the Regional Cancer Centre renders diagnostic services to Sree Avittom Thirunal Hospital, Medical College Hospital, Sanatorium for Chest Diseases, Pulayanarkottah, in addition to the services rendered to the Regional Cancer Centre. Some Government hospitals and private hospitals in the state also utilise such services.

The Cytology division of the Regional Cancer Centre received recognition as an accredited cytology laboratory by the Indian Academy of Cytology

The investigations carried out are the following

- * Routine Cervical Smear Screening of Patients attending the Gynaec. out patients department of SAT Hospital : 5618
- * Population Screening in Thrikkadavoor (Quilon District) and Trivandrum Corporation area : 2163
- * Hormonal Cytology : 3011
(for Bad obstetric history, Assessment of term, Ca Breast after therapy, primary and Secondary amenorrhoeas)
- * Diagnostic Cytology : 2974
(Aspiration from Miscellaneous sites, Impression Cytology, Sputum Cytology, Ascitic fluid, pleural fluid, urine aspirates, Buccal smear for Barr Bodies)

* Histology slide examination	:	50
* Bone marrow & peripheral Blood Smear of Cancer Patients	:	450
* Pregnancy test	:	897

The staff of the department are involved in teaching medical undergraduates, Post Graduate students in Pathology, students undergoing Medical Laboratory Technician's course and also the Auxillary Nurse Midwife.

The Post Graduates from various departments whose thesis work involved cytological investigations and Immunological investigations were guided in their work. Evaluation of rapid staining technique in cytology is a research project currently undertaken by the department.

Clinical Laboratory Services

The Clinical laboratory services now function as a unit under the Research Division of the Cancer Centre. Routine haematological and biochemical investigations used for patient services are carried out in this clinical laboratory. Modern equipments such as 'Erma' automatic cell counter, Thrombocell 1000-platelet counter, Amee eyetone colorimeter, spectrophotometer and special diagnostic kits are currently in use for such clinical laboratory investigations. During the year, apart from routine investigations 2058 Haematological and 613 biochemical investigations were carried out in the laboratories.

Hospital Cancer Registry

The Hospital Cancer Registry at the Regional Cancer Centre started functioning in 1982. This is a part of the National Cancer Registry programme supported by the Indian Council of Medical Research and is one of the three such Hospital Based Cancer Registries established in the country. The Social Investigators of the registry visit the outpatient clinics, Inpatient wards, pathology department & Medical records of Regional Cancer Centre, Medical College Hospital, Sree Avittom Thirunal Hospital

and the Dental College. Such visits have registered a total of 3483 new cancer cases and the analysis is under progress. Co-operation from specialists, various clinics, medical records departments, and pathology, cytology departments have been generously extended for the success of the programme.

At the Regional Cancer Centre, the patient medical records have been restructured to suit the registry's operations and various forms and diagrams useful for accurate recording of information from patients have been designed. The registration of patients, follow up appointments etc. have been the systematised. Considerable improvement in follow up rate has been achieved. Evaluation of cancer care and treatment response can be achieved in a more efficient manner now. Every patients follow up schedule is carefully maintained and those who fail to turn up on the appointed date are contacted by postal follow up. During the year, 3190 reply paid post cards were sent to patients for such follow-up. A patient name index, diagnostic index and an accession register have been maintained to help the registry operations. The Distribution pattern of cancer cases registered by the Hospital Cancer Registry according to WHO, ICD-9 rubrics is provided in table 1.

Research Division

The Research Division of the Regional Cancer Centre is engaged in clinically oriented research on human cancer. Presently there are facilities for research work in Immunology, Biochemistry, Cell Biology and Cytogenetics. The clinical laboratory under the Research Division is involved in routine haematological and biochemical tests necessary for the diagnosis and treatment of cancer. Research in Immunology is centred around the detection and quantification of tumour associated antigens useful in early diagnosis as well as in the assessment of treatment response. The work has been mainly on oral cancer. Assessment of immune response in oral cancer patients before treatment, after radiotherapy and after radiotherapy and levamisole administration by (1) total leucocyte and lymphocyte count (2) lymphocyte population and subpopulation counts (3) Cell mediated immune response to oral cancer antigen by leucocyte

migration inhibition, Cytotoxic reaction etc. (4) quantitation of Immune complexes (5) quantitation of serum immunoglobulins and (6) detection of antibodies against oral cancer is a major programme of research in progress.

Search for biological markers in various types of cancer and development of immunotherapy schedule using crude antigen preparations mixed with Freund's complete adjuvant are two areas under study. Association of Herpes simplex virus and oral cancer is another research topic under investigation using immunological and biochemical parameters. The results from 300 patients studied showed the presence of high titre of Herpes simplex viruses I antibodies in the sera of patients with oral cancer compared to normal subjects (published in Indian Journal of Medical Research: April 1982). This has been confirmed recently by immunofluorescence studies which showed the presence of HSV 1 antigen in the oral cancer cells.

In another study, the presence of HSV 2 antigen has been demonstrated on the surface of Ca cervix cells.

Research in Biochemistry has been centred around the detection and quantitation of biochemical markers in the blood and urine which may serve as early warning signs of cancer as well as in the assessment of treatment response. Another area of interest is the isolation of new plant lectins which may serve as carriers of chemotherapeutic agents to specific tissues or cell types. Lectins from the seeds of jack fruit (*Artocarpus integrifolia*), *Thevetia* (*Thevetia norifolia*) and Bengal gram (*Cicer arietinum*) have been isolated and purified in this laboratory. Lectin from Bengal gram caused agglutination of erythrocytes of human A, B and O blood groups whereas lectin from jack fruit reacted with erythrocytes of A group and neuramidase treated O group erythrocytes. On the other hand *Thevetia* lectin was able to agglutinate A group blood cells and rabbit erythrocytes while sheep and ox blood were unaffected. The above lectins were conjugated with horse radish peroxidase and tissue specificity was tested with diaminobenzidine tetrachloride (DAB) staining. *Thevetia* lectin was found to attach specifically to mast cells of the tongue whereas jack fruit lectin was specific to epithelial cells of tongue, intestine and blood vessels. Bengal

gram lectin was however nonspecific. An original paper on the tissue specificity of these lectins was presented at the International symposium on Immunohaematology held in Bombay in December 1982.

Dr. David Robertson of Chester Beatty Institute, Royal Cancer Hospital, London was here from 20-3-1983 to 7-4-83 testing the specificity of lectins from winged bean, soya bean, jack fruit and peanut using normal and cancerous tissues of human origin. Of these lectins, jack fruit lectin was found to specifically adhere to human tumour cells whereas lectin from winged beans showed specificity to cell membranes irrespective of cell types. When used on cervical smears the jack fruit lectin was giving positive incorporation comparable to the results from pap smear. Hence it appears that this lectin can be exploited for diagnostic and therapeutic uses.

Research work in cell Biology has been planned with the following objectives.

1. Cytological characterisation of premalignant lesions.
2. Identification of the sites of primary tumours by the characterization of invading malignant cells in the secondaries.
3. Systemic, cytologic and molecular aspects of tumour metastasis.
4. Employment of in vitro autoradiography as a predictive test in cancer chemotherapy. A research paper on the drug response of breast tumour cells has been accepted for publication in *Acta Cytologica* (Baltimore).
5. Screening of new drugs for anticancer activity using in vitro autoradiographic assay.

Currently different human tumours are grown in culture for further studies.

Research in Cytogenetics is mainly concerned with chromosome banding studies on different types of tumours and search for new cytological markers and cytological aberrations. A

major project on radiation drug interaction is proposed to be started under the joint venture of Radiotherapy and Cell Biology units.

Library

Apart from the main library of the Medical College, the Regional Cancer Centre has a collection of 1388 books mostly on Cancer. Additions are made regularly. We are also subscribing for 10 cancer journals.

TABLE 1
CANCER CASES REGISTERED BY THE HOSPITAL CANCER
REGISTRY 1982

ICD	SITE	MALE		FEMALE		TOTAL	
		No.	%	No.	%	No.	%
140	Lip	14	0.8	17	1.0	31	0.9
141	Tongue	151	8.1	52	3.2	203	5.8
142	Sal. Gland	15	0.8	4	0.3	19	0.5
143	Alveoli	70	3.8	53	3.3	123	3.5
144	Fl. mouth	16	0.8	2	0.1	18	0.5
145	Buccal mucosa	256	13.8	134	8.2	390	11.2
146	Oropharynx	59	3.2	15	0.9	74	2.1
147	Nasopharynx	25	1.4	9	0.6	34	1.0
148	Hypopharynx	72	3.9	17	1.0	89	2.6
150	Oesophagus	105	5.7	23	1.4	128	3.7
151	Stomach	78	4.2	28	1.7	106	3.0
152	Small Intestine	2	0.1	—	—	2	0.1
153	Colon	21	1.1	6	0.4	27	0.8
154	Rectum etc.	35	1.9	27	1.7	62	1.8
155	Liver	48	2.6	18	1.1	66	1.9
156	G. Bladder etc.	3	0.2	2	0.1	5	0.1
157	Pancreas	9	0.5	9	0.6	18	0.5
158	Retroperitoneum	5	0.3	8	0.5	13	0.4
160	Nasal cavity etc.	24	1.3	16	1.0	40	1.1
161	Larynx	97	5.2	8	0.5	105	3.0
162	Lung	200	10.8	19	1.2	219	6.3
164	Mediastinum etc.	10	0.5	1	0.1	11	0.3
170	Bone	32	1.7	19	1.2	51	1.5
171	Conn. Tissue	22	1.2	24	1.5	46	1.3
172	Melanoma	10	0.5	4	0.3	14	0.4
173	Skin	20	1.0	11	0.7	31	0.9
174	Breast (F)	—	—	295	18.1	295	8.5
175	Breast (M)	3	0.2	—	—	3	0.1
179	Uterus Nos	—	—	15	0.9	15	0.4
180	Cervix	—	—	430	26.4	430	12.3

ICD	SITE	MALE		FEMALE		TOTAL	
		No.	%	No.	%	No.	%
181	Placenta	—	—	3	0.2	3	0.
182	Body Uterus	—	—	14	0.9	14	0.
183	Ovary	—	—	79	4.9	79	2.
184	Vagina, Vulva	—	—	20	1.2	20	0.
185	Prostate	21	1.1	—	—	21	0.
186	Testis	9	0.5	—	—	9	0.
187	Penis	33	1.8	—	—	33	0.
188	Urinary bladder	38	2.1	4	0.3	42	1.
189	Kidney etc.	17	0.9	12	0.7	29	0.
190	Eye	8	0.4	5	0.3	13	0.
191	Brain	58	3.1	34	2.1	92	2.
192	Nervous system NOS	4	0.2	2	0.1	6	0.
193	Thyroid	22	1.2	61	3.7	83	2.
194	Other endocrine	1	0.1	2	0.1	3	0.
195	Other ill-defined sites	10	0.5	12	0.7	22	0.
196	Lymph nodes	27	1.5	13	0.8	40	1.
197	Sec. Resp. & Digestive	14	0.8	17	1.0	31	0.
198	Sec. other specified	19	1.0	13	0.8	32	0.
199	Unknown primary	26	1.4	11	0.7	37	1.
200	Lympho Sarcoma etc.	33	1.8	7	0.4	40	1.
201	Hodgkins disease	19	1.0	6	0.4	25	0.
202	Other lymphoid & Histiocytic tissue	16	0.9	10	0.6	26	0.
203	Multiple Myeloma	25	1.4	17	1.0	42	1.
204	Lymphoid Leukaemia	36	1.9	14	0.9	50	1.
205	Myeloid Leukaemia	15	0.8	7	0.4	22	0.
206	Monocytic Leukaemia	1	0.1	—	—	1	0.
140-208	All Sites	1854	100	1629	100	3483	100

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DISTINGUISHED VISITORS DURING THE YEAR

1. Dr. Andrew Morgan Sr. Physicist, St. Thomas Hospital, London.
2. Dr. A. V. Lakshmanan Dy. Director, Cancer Institute, Madras.
3. Dr. B. D. Gupta Professor of Radiotherapy, Chandigarh.
4. Mr. C. Ramachandran Secretary, Department of Health, Government of Kerala, Trivandrum.
5. Prof. C.J. Karzmark Professor of Radiology, Radiological Physics Section, Stanford University Medical Centre, California, USA.
6. Dr. Calum S. Muir Epidemiologist, International Agency for Research on Cancer.
7. Dr. David Robertson Scientist, Chester Beatty Research Institute, Royal Cancer Hospital, London.
8. Dr. Frank Ellis Prof. of Radiotherapy, University of Oxford.
9. Dr. Fritz Van Dam Adviser to WHO programme on quality of Life in Cancer Patients, Netherlands Cancer Institute, Amsterdam.
10. Dr. Haridas Electronics Division, BARC
11. Dr. Helen Morgan Department of Radiotherapy, The Royal Free Hospital, Pond Street, Hampstead, London.

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|-----|------------------------|--|-----|--------------------------|--|
| 12. | Dr. John Wilkinson | Consultant physicist, Christie Hospital and Holt Radium Institute, Manchester, U.K. | 24. | Dr. S.S. Sidhu | Secretary, Department of Health, Government of India. |
| 13. | Prof. Joslin | Professor of Radiation Therapy, University of New Castle, England. | 25. | Dr.(Mrs) Susan Standfast | Research physician, Bureau of Cancer Control, New York, State Department of Health Albany, New York. |
| 14. | Dr. Kamal. J. Ranadive | Professor Emeritus, Ex-Dean, Cancer Research Institute, Bombay. | 26. | Dr. V. Shanta | Director, Cancer Institute, Madras. |
| 15. | Mr. K.G.R. Kartha | Hon. Minister for Health, Government of Kerala. | 27. | Dr. Usha K. Luthra | Senior Deputy Director General, Indian Council of Medical Research, New Delhi. |
| 16. | Dr. K. Rajagopal | Dean, Medical College, Tinneveli. | | | |
| 17. | Col. Lakshmypathy | Director, I. N. M. A. S, New Delhi. | | | |
| 18. | Dr. L.D. Sanghvi | Co-ordinating Officer, Cancer Registry Project, Indian Council of Medical Research, New Delhi. | | | |
| 19. | Dr. Nirmal Kumar Gupta | Consultant Radiotherapist, Christie Hospital and Holt Radium Institute, Manchester. | | | |
| 20. | Dr. N. Zaman | Principal, Assam Medical College, Dibrugarh. | | | |
| 21. | Sri. Ramamoorthy | Radiopharmaceuticals Division, B.A.R.C. | | | |
| 22. | Dr. R.D. Ganatra | Chief, Radiation Medicine Centre, Bhabha Atomic Research Centre, Bombay. | | | |
| 23. | Dr. R.S. Rao | Surgeon Superintendent, Tata Memorial Hospital, Bombay. | | | |

STAFF

<i>Director</i>	— Dr. M. Krishnan Nair
<i>Superintendent</i>	— Dr. T. K. Padmanabhan

Radiotherapy

Dr. M. Krishnan Nair	Professor
Dr. T. K. Padmanabhan	Professor
Dr. N. Balakrishnan Nair	Associate Professor
Dr. F. Joseph	Assistant Professor
Dr. V. G. Sudhakaran	Assistant Professor
Dr. B. Rajan	Assistant Professor
Dr. G. Suresh Chandra Dutt	Tutor
Dr. C. S. Rafeeka Begum	Tutor
Dr. P. G. Jayaprakash	Tutor
Dr. S. Parameswaran	Tutor
Smt. B. Vimala	Radiographer (Teaching)
Mr. N. Sadasivan Nair	Radiographer
Smt. S. Suseelamma	Radiographer
Mr. V. Gangadharan Nair	Radiographer
Mr. V. Madhusoodanan	Radiographer
Smt. P. Seetha	Radiographer
Smt. K. M. Saramma	Radiographer
Smt. M. Leela	Radiographer
Mr. S. Sreenivasan	Radium Technician

Dental Section

Dr. L. Sudha	Tutor
Dr. M. Sasidharan Nair	Tutor
Smt. M. Krishnambal	Hygienist
Mr. P. R. Chandrasekharan Nair	Hygienist

Nuclear Medicine

Dr. P. Ramachandran Nair	Assistant Professor
Dr. V. M. Pradeep	Research Scholar
Mr. Raghu Ram K. Nair	Lecturer

Radiation Physics

Dr. T. P. Ramachandran	Associate Professor
Mr. P. G. Gopalakrishna Kurup	Assistant Professor
Mr. C. A. Davis	Lecturer

Cytology

Dr. N. Sreedevi Amma	Associate Professor
D. M. K. Lalitha Bai	Assistant Professor
Dr. B. Kumari Chandrika	Assistant Professor
Smt. J. Ambika Kumari	Senior Scientific Officer
Mr. G. Raghunathan Nair	Cytologist
Mr. K. V. Vijayagopal	Junior Research Officer
Mr. P. Gopalakrishnan	Research Assistant
Smt. K. S. Ponnamma	Technician
Mr. R. Muraleedharan	Technician
Smt. Anandavally	Technician
Smt. S. Najeeya	Technician
Smt. M. Sathy Ammal	U. D. Typist

Cancer Surgery

Dr. M. Abdul Khader	Assistant Professor
Dr. Thomas Cheriyan	Assistant Professor

Paediatric Consultant

Dr. Alphonsa J. Erinjeri	Consultant Paediatric Oncologist.
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Cancer Research

Dr. M. Vasudevan (on deputation)	Associate Professor
Dr. J. Stephen	Associate Professor
Dr B. Prabha	Assistant Professor
Mr. T. Vijaya Kumar	Senior Research Officer
Smt. B. Padmavathi Amma	Technician
K. K. Soman	Technician
Mr. K. K. Vijayan	Research Scholar
Mr. V. K. Sasidharan	Research Scholar

Mr. Ravindran Ankathil
Mr. Thomas Abraham
Smt. T. V. Kumari
Smt. P. Ramani
Smt. V. Thankamani

Research Scholar
Research Scholar
Research Scholar
Research Scholar
Research Scholar

Hospital Cancer Registry and Medical Record

Mr. P. Gangadharan
Dr. R. Sankaranarayanan
Mr. S. Muraleedharan Nair
Mr. R. Raveendran Nair
Smt. G. Padmakumari Amma
Smt. P. T. Latha
Smt. Anitha Nayar
Smt. V. Jalajakumari
Mr. C. P. Balachandran Nair
Mr. L. G. Amaldas
Mr. Rajasekharan Nair
Smt. Kumari Jaya
Smt. C. Sreedevi kutty
Smt. S. Ponnammal
Mr. S. Rajayyan

Biostatistician
Senior Research Officer
Medical Statistician
Medical Record Officer
Senior Research fellow
Social Investigator
Social Investigator
Clerk
Clerk
Clerk
Clerk
Coding Clerk
Typist
Receptionist
Tech. Helper.

Administrative Office

Mr. E. U. Aravindakshan
Mr. K. Ramakrishnan Potti
Mr. K. Parameswaran
Smt. K. Lalitha Bai
Mr. P. Krishna Pillai
Mr. A. Radhakrishnan
Smt. C. G. Thankamani
Smt. J. Ragini Amma
Mr. M. Subair
Mr. P. Krishnan Nair

Administrative Officer
Financial Assistant
Confidential Assistant
U. D. Clerk
U. D. Typist
Confidential Assistant
Confidential Assistant
Clerk Typist
Peon
Driver

UTILISATION CERTIFICATE

Certified that out of total grant sanctioned to the Regional Cancer Centre Society (Regn. No.567/81) Trivandrum during the year ended 31-3-1983 of Rs.43,00,000 (Rupees Forty three lakhs) by the Government of India, Ministry of Health and Family Welfare, New Delhi towards final instalment for 1981-82 as per letter No. V 22015/2/81-R dated 8-3-1982 of Rs.5,00,000 and towards grant for 1982-83 as per letter Nos V.22015/7/82-R dated 29-7-82 as I instalment of Rs.7,00,000, No. V.22015/7/82-R dated 30-11-1982 as II instalment of Rs.13,00,000 and No. V.22015/7/82-R dated 30-3-1983 as III instalment of Rs.18,00,000 to meet the plan expenditure for the development of Regional Cancer Centre and including the unspent balance of grant of Rs.1,62,872.67 (Rupees one lakh sixty two thousand and Eight hundred and seventy two and paise sixty seven only) of the previous year, the Society has utilised a sum of Rs.12,88,753.03 (Rupees twelve lakhs eighty eight thousand seven hundred and fifty three and paise three only) for the purpose for which it was sanctioned and that there is an unspent balance of Rs.31,74,119.64 (Rupees Thirty one lakhs seventy four thousand one hundred and nineteen and paise sixty four only). The unspent balance of grant has been earmarked by the society for purchase of medical equipments for which necessary letters of credits has been opened with their bankers. It is also certified that out of the sanctioned grant a sum of Rs.18,00,000 (Rupees eighteen lakhs only) towards the IIIrd instalment of the grant for 1982-83 is yet to be received by the Society as on 31-3-1983.

Vazhuthacaud,
Trivandrum-14
Dated : 29-7-1983

Varma & Varma
Chartered Accountants

REGIONAL CANCER CENTRE
Income and Expenditure Account for

<i>EXPENDITURE</i>	<i>Rs. Ps</i>
To Opening stock of chemicals, films etc.	6,662 .62
„ Purchase of chemicals, films etc.	87,210 .37
„ Salaries and allowances	73,756 .94
„ Printing and stationery	7,064 .47
„ Travelling expenses	77,022 .50
„ Postage, telegram and telephone	12,528 .70
„ Advertisement charges	7,501 .00
„ Books and journals	18,162 .98
„ Service charges of equipment	17,148 .21
„ Repairs and maintenance of vehicles	10,023 .50
„ Audit fee	1,500 .00
„ Miscellaneous expenses	20,047 .00
„ Expenses of Hospital based National Tumour Registry Programme as per separate audited statement	1,74,787 .21
„ Grant received from Indian Council of Medical Research for various other schemes disbursed	24,160 .00
(Carried Over)	5,37,575 .6

SOCIETY (Rgn. No. 567/81)
the year ended 31st March, 1983.

<i>INCOME</i>	<i>Rs. Ps.</i>	<i>Rs. Ps.</i>
By Unspent balance of grant received from Government of India during previous year	1,62,872 .67	
„ Grant from Government of India, Ministry of Health and Family Welfare, New Delhi as per letter No.V.22015/2/81-R dated 8-3-1982 for 1981-82 final instalment	5,00,000 .00	
„ -do- I instalment of grant for 1982-83 as per letter No. V.22015/7/82-R dated 29-7-1982	7,00,000 .00	
„ -do- II Instalment of grant as per letter No. V.22015/7/82-R dated 30-11-1982	13,00,000 .00	
„ -do- III instalment of grant as per sanction letter No. V.22015/7/82-R dated 30-3-1983	18,00,000 .00	
	44,62,872 .67	
„ Grant from Government of Kerala Health (J) Department as per G.O.Rt.No.2404/82/HD dated 8-10-1982	20,00,000 .00	
„ Financial assistance from Directorate of Health Services, Trivandrum as per letter No. PL7-70878/79 DHS dated 2-3-1982	1,00,000 .00	
(Carried Over)	65,62,872 .67	

REGIONAL CANCER CENTRE SOCIETY (Rgn. No. 567/81)
Income and Expenditure Account for the year ended 31st March, 1983

<i>EXPENDITURE</i>	<i>Rs. Ps.</i>	<i>INCOME</i>	<i>Rs. Ps.</i>	<i>Rs. Ps.</i>
(Brought Forward)	5,37,575.68	(Brought Forward)	65,62,872.67	
To Depreciation w/off on assets	2,90,987.52	Less: Grant utilised during the year for acquisition of capital assets	9,82,296.57	
			55,80,576.10	
		Less: Unspent balance of grant transferred to Balance Sheet	52,74,119.64	3,06,456.46
		By Interest from Banks		22,183.75
		„ Miscellaneous receipt		3,325.55
		„ Donation		3,000.00
		„ Closing stock of chemicals, films, sundry medical instruments etc. as taken, certified and valued at cost by the Technical Director		28,162.00
		„ Receipts of Hospital based National Tumour Registry Programme as per separate audited statement		
		Grant from I.C.M.R.	1,74,274.05	
		Interest from Bank	322.40	
		„ Grants received from I.C.M.R. for other schemes	1,74,596.45	24,160.00
		„ Excess of expenditure over income for the year		2,66,678.96
Total	8,28,563	Total	8,28,563.17	

REGIONAL CANCER CENTRE

Balance Sheet

LIABILITIES	Rs.	Ps.	Rs.	Ps.
Capital Fund				
Amounts utilised by way of acquiring capital assets out of the grant received from Govt. of India and Govt. of Kerala as per last B/s.	11,12,419.	70		
<i>Add:</i> Cost of Capital assets acquired during the year	9,82,296.	57	20,94,716.	27
Amount utilised out of the grant received from Indian Council of Medical Research for Hospital based National Tumour Registry for acquisition of capital assets as per last B/s	26,719.	77		
<i>Add:</i> Grant utilised during the year	16,530.	95	43,250.	72
Unspent balance of grant received from Govt. of India, Ministry of Health and Family Welfare, New Delhi			52,74,119.	66
Expenses payable			2,000.	00
Audit fee				
Earnest Money Deposit Account collections during the year	81,830.	00		
<i>Less:</i> Repaid during the year	33,330.	00	48,500.	00
Total			74,62,586.	63

Note: An amount of Rs. 35,24,277.41 standing in the credit of Society's bank account with State Bank of Travancore is ear-marked for importing Medical Equipments, which L/C has already been opened with the Bank.

(Sd/-)

Technical Director

SOCIETY, TRIVANDRUM (Regn. No. 567/81)

as at 31-3-1983

ASSETS	Rs.	Ps.	Rs.	Ps.
Fixed assets as per Schedule			16,76,179.	00
Deposit for OYT Scheme (Telephones)			8,000.	00
Advance for purchase of equipments			6,903.	00
III instalment of grant receivable for 1982-83 from Govt. of India, Ministry of Health & Family Welfare, New Delhi			18,00,000.	00
Closing stock of chemicals, films, sundry Medical instruments etc. as taken certified and valued by the Technical Director			28,162.	00
Cash and Bank Balances:				
Cash in hand as certified by the Technical Director	310.	83		
—do— (National Tumour Registry Programme)		0.	63	
Balance with State Bank of Travancore in SB a/c No.C.9610	358.	55		
—do— No. C.10493	35,24,277.	41		
			35,24,947.	42
Income and Expenditure Account:				
Balance as per last B/s.	1,51,716.	25		
<i>Add:</i> Excess of expenditure over income for the year	2,66,678.	96		
			4,18,395.	21
Total			74,62,586.	63

AUDITOR'S REPORT

We have verified the foregoing Income and Expenditure Account for the year ended 31-3-1983 and the Balance Sheet as at 31-3-1983 of Regional Cancer Centre Society, Trivandrum with the cash book, vouchers and bank pass book produced before us and we certify the same to be correct as disclosed by these records.

(Sd/-)

Varma & Varma
Chartered Accountants

Trivandrum,
Dated: 27-7-1983

REGIONAL CANCER CENTRE SOCIETY (Reg. No. 567/81)

Schedule of Fixed Assets forming part of Balance Sheet as on 31-3-1983.

Sl. No.	Nature of assets	W/D Value as on 1-4-82	Additions during the year		Total	Depreciation		Balance as on 31-3-83
			R.C.C.	Tumour Registry		Rate	Amount	
1.	Building under construction	6,500.00	8,340.00	..	14,840.00	..	..	14,840.00
2.	Furniture and fixtures	27,936.00	73,650.59	5,679.90	1,07,266.49	10	10,726.49	96,540.00
3.	Office equipments	9,371.00	39,109.58	9,728.80	58,209.38	15	8,731.38	49,478.00
4.	Hospital and Laboratory Equipments	9,24,032.00	7,90,124.05	600.00	17,14,756.05	15	2,57,213.05	14,57,543.00
5.	Ambassdor car	..	70,212.35	..	70,212.35	20	14,042.35	56170.00
6.	Cycle	..	860.00	..	860.00	20	172.00	688.00
7.	Library Books	..	..	1,022.25	1,022.25	10	102.25	920.00
	Total	Rs. 9,67,839.00	9,82,296.57	17,030.95	19,67,166.52		2,90,987.52	16,76,179.00

(Sd/-)

Varma & Varma