

**REGIONAL  
CANCER  
CENTRE**

**THIRUVANANTHAPURAM**

**2000-2001**

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## **REGIONAL CANCER CENTRE**

THIRUVANATHAPURAM-695 011, KERALA, INDIA

### **REPORT OF ACTIVITIES 2000 - 2001**

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## OVERVIEW

The Regional Cancer Centre, Trivandrum having entered into its 20th year of existence, has passed many important milestones in its endeavour to provide comprehensive cancer care. The centre has again special records in its continuing achievements in the current reporting year also. RCC has been designated as a Centre of Excellence by the Ministry of Health and Family Welfare for its comprehensive cancer treatment, basic, applied and statistical research in various specialties of oncology. RCC is one of the two centers from Kerala selected by the Ministry of Health and Family Welfare, Government of India for this honour this year. Another significant achievement is that the Govt. of India earmarked RCC as one of the centers for training of WHO-Government of India sponsored candidates to undergo advanced training in various fields of Oncology.

A notable and proud achievement has been the award of 'Padmasree' to Dr.M Krishnan Nair, Director of RCC for his contribution to cancer control activities in the country as well as for providing international leadership in all spheres of cancer care.

The staff of RCC have been involved in bringing out an international journal titled Austral-Asian Journal of Cancer. The Honorable President of India H.E.Sri K R Narayanan released the first issue of this journal on 7th June 2000 in a prestigious function at the Rashtrapathi Bhavan, New Delhi.

The infrastructure of the centre is further being expanded with the proposed commissioning of the new operation theatre complex, which has four new operating rooms and a postoperative intensive care unit. Radiotherapy facilities are also being expanded by the addition of newer teletherapy units. We are proud to state that RCC has been successful in the design and fabrication of a remote after loading brachytherapy unit with assistance from the Department of Science and Technology, New Delhi. The machine was formally inaugurated by Padmasree Sri C P Thakur, Honorable minister of Health & Family Welfare, Govt of India. Further, RCC has been awarded a grant of Rs. 5 crores by the Japanese Debt Relief Society for the purchase of a high-energy linear accelerator.

RCC has always been concerned at providing multidisciplinary service for site-specific cancers and the Governing body of the centre finally approved this. As a first step, three site-specific multidisciplinary clinics were commissioned in June 2000 for head and neck, gynaecologic



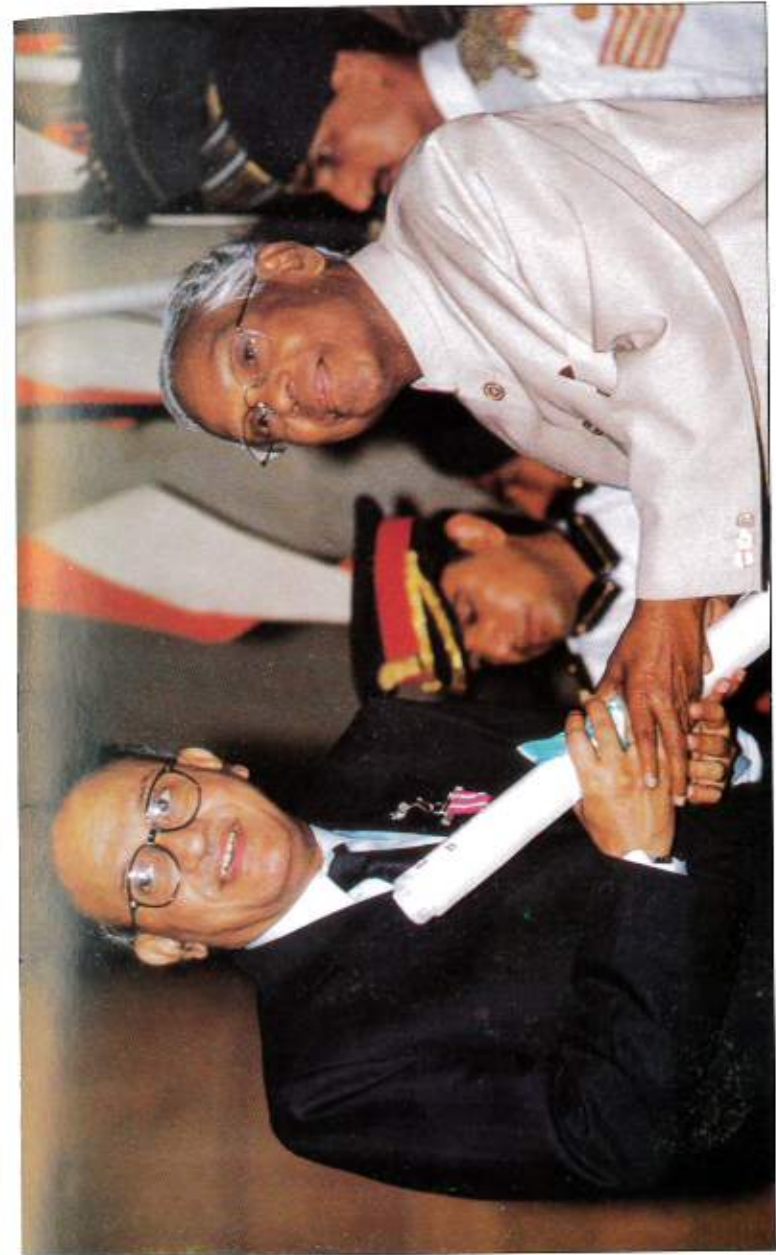
and breast cancers. The next step would be to totally replace the current unit system and to organize multidisciplinary clinics for all sites. The obvious advantage of this service would be for the patients who could receive optimum treatment from a panel of specialists and for the staff to initiate clinical research on each form of cancer.

The centre organised a number of national and international academic programmes, the notable among them being the International Workshop on Management of Cancer Pain and Palliative Care held in June 2000 with overseas faculty (Dr. Stuart A Grossman, Professor of Neuro-Oncology, Johns Hopkin's Medical Institution, USA). Another important programme was the CME on breast cancer organized in association with the Kerala chapter of Radiation Oncologists of India, which was attended by Sir. (Prof) Richard Peto, Oxford.

With the aid from UNFPA, the centre has been able to organize cancer control programmes in the Northern Districts of Kannur, Kasargod and Wayanad in close collaboration with the Kerala Govt. Health Department. The Honorable Minister for Health and Family Welfare, Government of Kerala officially inaugurated the Programme on 17 November 2000 at Kannur. As part of this project cancer detection and prevention clinics have been set up in Kanhangad, Manathavady and augmented the Malabar Cancer Care Society Cytology Laboratory at Kannur. This programme will be integrated in to the existing health care services in the Districts, which will ensure continuity of services.

RCC has established a telemedicine network of peripheral centers in Ernakulam and Palakkad with financial support from the Ministry of Information Technology and is planning to expand the services to other peripheral centers such as Kollam, Karunagappally and Kannur as a second phase. The software developed in collaboration with ER & DCI is used for patient surveillance; providing on-line diagnosis, and other primary patient services. A group of cancer specialists at the RCC would offer the on-line services. The expert group would also be able to contact physicians at nodal centers. The interactive website of RCC is being developed to provide services for early cancer detection, advice for investigations, treatment and palliative care.

It is heartening to observe that the centre has emerged as an academic and research institute par excellence. What has made this possible is the enviable combination of the dedicated service of the staff and the unstinted co-operation of the Government, without doubt, a combination that will prove to be as effective, if not more, when it comes to the relentless crusade against cancer in the years to come.



Dr. M. Krishnan Nair, Director, RCC receiving the 'Padmasree' award from His Excellency Sri K.R. Narayanan, President of India.





His Excellency Sri K.R. Narayanan, President of India, Releasing the first issue of the Austral-Asian Journal of Cancer at the Rashtrapathi Bhavan on 7th June 2000.

## DEPARTMENTAL ACTIVITIES

### RADIATION ONCOLOGY

Dr. M. Krishnan Nair ✓	Professor & Director
Dr. B. Rajan ✓	Professor & Additional Director
Dr. T. Gangadevi ✗	Professor
Dr. P. G. Jayaprakash ✓	Additional Professor
Dr. C. S. Rafeeka Beegum ✓	Additional Professor
Dr. Sureshchandra Dutt ✓	Additional Professor
Dr. S. Parameswaran ✓	Additional Professor
Dr. V. N. Bhattathiri ✓	Associate Professor
Dr. Jayaprakash Madhavan ✓	Associate Professor
Dr. K. Ramadas ✓	Associate Professor
Dr. K. Ratheesan ✗	Associate Professor
Dr. Thomas Koiparambil ✓	Associate Professor
Dr. Francis V James ✓	Associate Professor
Dr. Beela Sarah Mathew ✓	Assistant Professor
Dr. T. V. Ajithkumar ✗	Assistant Professor
Dr. Aswin Kumar ✓	Lecturer
Dr. C. D. Sivanandan ✓	Lecturer

The division continues to be the largest division of the centre in terms of the number of academic staff and the quantum of work carried out.

#### Clinical Activities

Even though 3 multidisciplinary clinics have been introduced

since June 2000 in head & neck, gynaecologic and breast cancers, the three exclusive Radiotherapy units are maintained.

#### **Patient Statistics: year 2000**

New patients	-	9,803
Review patients	-	64,537
Inpatient admissions	-	6,098

The division also takes lead in the conduct of inter-disciplinary patient review meetings in collaboration with the various departments of the Medical College Hospital, Trivandrum. These include Paediatric oncology (weekly), surgical, gastro-enterology and gynaec tumor boards (all monthly). The staff of the division are also involved in the follow-up clinics at the various peripheral clinics of RCC.

#### **Teaching/ Training Programme**

As in the previous year, the division continues to be fully involved in the post-graduate teaching programme for MD Radiotherapy and DMRT, University of Kerala. Annually 2 students are recruited for MD Radiotherapy and 3 for DMRT.

#### **Award/Honors**

The most notable achievement has been the award of Padmasree to the director and head of the division of Radiotherapy, Dr. M Krishnan Nair. An equally important event has been the launching of a prestigious international journal Austral-Asian Journal of Cancer with Dr. Thomas Koiparambil, Associate Professor of Radiotherapy, as the chief editor. Two issues of the journal have already come out and the third is under print.

#### **New Infrastructure**

The RCC administration decided to purchase one cobalt teletherapy unit, which is expected to be commissioned in mid 2001. The division also received grant from the Govt. of India for the purchase of a high-energy linear accelerator and this machine is also expected to be installed in the coming academic year.

#### **Conference/Workshop: Organized**

The division organized a CME programme on Breast Cancer in association with the Kerala chapter of Radiation oncologists of India. Several national experts attended the workshop. Sir Richard Peto, Oxford,

gave keynote address on the 2000 overview on early breast cancer by the breast cancer trialists collaborative group.

#### **Ongoing Research Projects**

- 1. Adjuvant Tamoxifen in Breast Cancer - Longer against shorter**  
(Funded by: Clinical Trial Services Unit, Oxford, U.K.)  
Principal Investigator Dr.B Rajan
- 2. Randomized trial of adjuvant endocrine therapy and chemotherapy in women with early breast cancer** (recruitment closed)  
(Funded by: UKCCCR, London)  
Principal Investigator Dr.B Rajan
- 3. Primary progesteron therapy for operable breast cancer- a randomized multi-centre study**  
(Collaborators: Indian Breast Group & Tata Memorial Hospital, Mumbai)  
Principal Investigator Dr.B Rajan
- 4. Phase 3 randomized double-blind evaluation of a new estrogen receptor modulator compared with tamoxifen in locally advanced or metastatic breast cancer**  
(Funded by: M/s Eli Lilly Ranbaxy, Ltd)  
Investigator Dr.B Rajan
- 5. Estrogen receptor gene polymorphism in Indian breast cancer patients and response to tamoxifen treatment.**  
(Funded by Kerala State Committee for Science, Technology and Environment)  
Principal investigator Dr. B Rajan
- 6. Trivandrum Oral-Cancer Screening Study (TOCS): Population based screening for oral malignant and premalignant lesions**  
(Funded by International Agency for Research on Cancer)  
Co-investigators Dr.K Ramdas
- 7. Role of Vitamin A prophylaxis in preventing malignant transformation of oral premalignant lesions**

*(Funded by International Agency for Research on Cancer)*

Co-investigators Dr.K Ramdas

**8. Genotyping of the CYP1A and GSTM1 genes in tobacco associated oral cancers.**

*(Funded by Indian Council of Medical Research)*

Co-investigator Dr. K Ramdas

**9. Multicentre study of cremophor-free, protein stabilized, nanoparticle formulation of paclitaxel (ABJ-007) in patients with stage IV metastatic breast cancer.**

*(Funded by Quintiles India Ltd.)*

Principal investigator Dr. M Krishnan Nair

Co-investigator Dr. K Ratheesan

**10. Impact of cancer in the geriatric patients**

*(Funded by Science and Technology, Kerala)*

Principal investigator Dr. Suresh C Dutt

**11. Is clinical response to treatment with methotrexate of oral cancer proportional to the degree of folate deficiency?**

*(Funded by Science and Technology, Kerala)*

Principal investigator Dr.V N Bhattathiri

**12. A phase III double-blind, placebo-controlled trial of gemcitabine and INT115777 versus gemcitabine and placebo in patients with advanced pancreatic cancer**

*(Funded by Quintiles Spectral India Ltd, Ahmedabad)*

Principal investigator Dr. M Krishnan Nair

Co-investigators Dr. Jayaprakash Madhavan  
Dr. Francis V James

**13. Natural Background Radiation Cancer Registry (NBR)**

Principal investigator Dr. M Krishnan Nair

## SURGICAL ONCOLOGY

Dr. M. Iqbal Ahamed	Associate Professor (on leave)
Dr. Paul Sebastian	Associate Professor
Dr. K. Chitrathara	Assistant Professor
Dr. Jem Prabhakar	Assistant Professor
Dr. Cherian Koshy	Assistant Professor
Dr. Namrata Dhakshad	Assistant Professor
Dr. Manoj Pandey	Assistant Professor
Dr. Shaji Thomas	Assistant Professor
Dr. Bipin T. Varghese	Assistant Professor
Dr. Paul Augustine	Lecturer
Dr. Firoz Rajan	Lecturer
Dr. P. G. Balagopal	Lecturer
Dr. Elizabeth M. Iype	Medical Officer Lecture(ad-hoc)(one)

This division continues to provide a very important role in the diagnosis, treatment and palliation of a variety of cancers occurring at various sites. Out patient clinics are conducted six days a week and operations performed on 5 days a week.

The new Operation Theater Complex, which has 4 operating rooms and a postoperative intensive care unit, was formally inaugurated on 17 January 2001. The division has taken over the responsibility of the endoscopy services also in this reporting year.

### Clinical activities

During the reporting year, 1801 operations and 1486 endoscopies were done. Of these, 1086 operations were major procedures done under general anesthesia and the rest 715 were minor operations. In the reporting year, there was an 18% increase in the number of operations done



compared to the previous year. The region-wise distribution of the 1086 major operations is given in Table 1.

**Table - 1 Major operations - distribution by region**

Region	No (1086)	Percentage
Head and Neck	498	45.86
Breast	211	19.42
Thorax and Abdomen	76	7.00
Genito Urinary	194	17.86
Bone and extremity soft tissue sarcoma	65	5.99
Skin and other miscellaneous tumours	42	3.87

Head and neck cancers constituted the largest group. The site-distribution of head and neck cancers is given in Table 2. Oral cancers especially tongue and bucco-alveolar cancers constituted the largest number within the group. Majorities of these cancers were locally advanced and needed composite resection and primary reconstruction. All the laryngectomies done except two, were done as salvage procedures for radiation failures. 42.4% of the thyroidectomies done were revision total thyroidectomies after incomplete surgery done elsewhere.

**Table - 2 Head and neck cancer- distribution by site**

Site	No (498)	Percentage
Oral cavity and oropharynx	302	60.64
Larynx and hypopharynx	25	5.02
Metastatic neck nodes	70	14.06
Thyroid	66	13.25
Salivary gland	20	4.02
Others	15	3.01

The number of breast cancers has been increasing consistently over the years. This year 51 more breast cancers were operated compared to the previous reporting year. Modified radical mastectomies were done in 184 (87%) patients and breast conservative surgery was done in 27 (13%) patients. Breast reconstruction was done in 7 patients. The site-distribution of genitourinary cancers is given in Table 3. Nearly 45% of extremity sarcomas had limb salvage surgeries. Three patients with extremity soft tissue sarcoma were treated by immediate postoperative brachytherapy.

**Table - 3 Genitourinary cancers - site distribution**

Site	No (194)	Percentage
Cervix	42	21.65
Endometrium	25	12.89
Ovary	78	40.22
Vulva	9	4.64
Penis	12	6.18
Kidney and ureter	8	4.12
Urinary Bladder	15	7.74
Others	5	2.56

### Endoscopy services

Flexible fiberoptic video endoscopy (upper GI endoscopy, colonoscopy, nasopharyngoscopy and bronchoscopy) as well as rigid nasal endoscopy, DL scopy and cystoscopy are routinely done. Most of the endoscopies were done as part of initial diagnostic work-up or as part of routine follow-up of treated patients. A few interventional procedures like esophageal stricture dilatation and stenting were also done. The details of the endoscopies procedure are given in Table 4.

**Table - 4 Endoscopic procedures**

Procedure	No (1480)
Nasopharyngoscopy	539
Bronchoscopy	110
Upper GI endoscopy	375
Sigmoidoscopy	15
Colonoscopy	40
Oesophageal stricture dilation	16
Oesophageal stenting	2
Rigid nasal endoscopy	35
DL scopy	23
Cystoscopy	325

### Ongoing Research Projects

1. International multicentric trial of Carboplatin and Carboplatin & Gemcitabin in advanced epithelial ovarian cancer.

- Co-investigator Dr. K. Chitrathara
2. **Trivandrum Oral Cancer Screening Study (TOCS): Population based screening for oral malignant and premalignant lesions**  
(Funded by International Agency for Research on Cancer)  
Co-investigators Dr. Paul Sebastian, Dr. Manoj Pandey
  3. **Role of Vitamin A prophylaxis in preventing malignant transformation of oral premalignant lesions**  
(Funded by International Agency for Research on Cancer)  
Co-investigators Dr. Paul Sebastian, Dr. Manoj Pandey
  4. **Study into the role of vitamin A in preventing the second primary malignancy in treated oral cancers**  
(Funded by International Agency for Research on Cancer)  
Co-investigators Dr. Paul Sebastian, Dr. Manoj Pandey
  5. **Open labeled single group study into the effect of M4N and G4N in advanced oral and cervical cancers**  
(Funded by John's Hopkins University, USA)  
Co-investigator Dr. Manoj Pandey
  6. **Genotyping of the CYP1A and GSTM1 genes in tobacco associated oral cancers**  
(Funded by Indian Council of Medical Research)  
Co-investigator Dr. Manoj Pandey
  7. **Metalloproteinases in oral cancer**  
(Funded by Indian Council of Medical Research)  
Co-investigator Dr. Manoj Pandey
  8. **A multicentric open labelled single and multiple dose study of Foscan mediated PDT for the palliative therapy of recurrent, refractory or second primary SCC of head and neck in patients considered to be incurable by surgery or radiotherapy.**  
(Funded by Nova Scotia)  
Co-investigators Dr. Iqbal Ahamed, Dr. Jem Prabhaker,

- Dr. Manoj Pandey
9. **Psycho-social and vocational rehabilitation of cancer survivors**  
(Funded by Centre for Developmental Studies, Kerala)  
Prinical investigator Dr. Iqbal Ahamed
  10. **The primary progesteron therapy for operable breast cancer: a randomized multicentre controlled trial**  
(Collaborators: Indian Breast Group & Tata Memorial Hospital, Mumbai)  
Co-investigator Dr. Iqbal Ahamed
  11. **Comparitive evaluation of early detection of cervical cancer precursor by acetic acid and Schillers iodine in Kerala.**  
(Funded by International Agency for Research on Cancer)  
Co-investigator Dr. Namrata Dhakad,  
Dr. Paul Sebastian, Dr. Chitrathara
  12. **Natural history of genital HPV infection**  
(Funded by International Agency for Research on Cancer)  
Co-investigator Dr. Namrata Dhakad,  
Dr. Paul Sebastian, Dr. Chitrathara
  13. **Cervical Cancer Control Project**  
(Funded by Bill Gates Foundation, U.S.A)  
Co-investigator Dr. Namrata Dhakad,  
Dr. Paul Sebastian, Dr. K Chitrathara

#### Awards/ Honours

**Dr. Bipin T. Varghese**

Reviewer Australasian Journal of Cancer

**Dr. Paul Augustine**

Young Scientist award for the best paper for presenting "Myocutaneous Flaps in the Intraoral Milieu - natural history of cutaneous component" at the IX Biennial National Conference of Indian Society of Oncology, in November 2000 (9th to 12th), at Hyderabad.

### **Dr.Chitrathara K**

1. Sessions Chaired: Free paper session UAKON & IV Annual Conference of Urology Association, Cochin 2000.
2. Public Orations (AIR): (1) Symptomatology of Genitourinary cancer (2) Colposcopic surgery in pre-invasive cancer cervix.

### **Dr. Manoj Pandey**

1. Reviewer, Australasian Journal of Cancer, Neoplasia, Cancer, Cancer Practice and Postgraduate Medical Journal.
2. Executive Member: Trivandrum Surgical Club

### **Dr. Elizabeth M Iype**

1. First place in Quiz competition held in State annual Conference of AOI at Kochi May 2000.
2. Reviewer Austri-Asian Journal of Cancer

### **Academic activities / Post graduate Training**

1. Post graduate students in General Surgery from Medical College, Trivandrum and in Oral and Maxillofacial surgery from Dental College, Trivandrum, Dental College Kozhikode, AB Shetty Dental College, Mangalore and KVG Dental College, Sullia, had regular posting in the division.
2. Dr. Joe Marsden, Specialist Register in General Surgery. Royal Marsden, Hospital, UK, underwent training in surgical oncology for over 9 months.
3. Symposia and journal clubs are conducted regularly on all Saturdays. This division also took part in all the academic activities of the institution.

### **Thesis Supervision**

1. "Lymphatic spread in head and neck cancers: a prospective study". MS (ENT), University of Kerala, Trivandrum, India 2001.
2. "Neck node spread from head and neck cancers" submitted for MDS (Oral and Maxillofacial Surgery), University of Kerala, 2001.
3. "Intravesical instillation of silver nitrate versus premarin in radiation cystitis". DNB in Urology



Inauguration of the New Theatre complex by Sri M. Vijayakumar,  
Hon'ble speaker in the presence of Sri V.S. Sivakumar, MP.





Inauguration of the New Theatre complex by Sri M. Vijayakumar, Hon'ble speaker in the presence of Sri V.S. Sivakumar, MP.



Tumor bed irradiation using  $^{192}\text{Ir}$  iridium remote after loading technique using microselectron in a patient with soft tissue sarcoma of the forearm a) per operative view b) post operative view



4. "Thyroid dysfunction following combined therapy for laryngeal cancer", Ongoing thesis for MS (ENT), University of Kerala
5. "Mandibular involvement in oral cancer", ongoing thesis for MDS (Oral and Maxillofacial Surgery), University of Kerala.

## ANAESTHESIOLOGY

Dr. Rachel Cherian Koshy	Associate Professor
Dr. Mary Thomas	Lecturer
Dr. A. Venugopal	Lecturer
Dr. Mallika Balakrishnan	Lecturer
Dr. Vasudevan Mappat	Anesthesiologist
Dr. Gladys Jeevy	Consultant Anaesthetist
Dr. B Gopalakrishnan	Consultant Anaesthetist
	Lecturer (Ad hoc) (one)

### Clinical Activities

The clinical activities include a thorough pre-anesthetic evaluation, pre-operative preparation intraoperative management and postoperative ICU care. 1124 patients were provided anaesthesia including 32 emergency procedures for major surgical procedures. Monitored anaesthesia care, which was provided for several day care procedures, including endoscopic procedures. Anaesthesia was also provided to uncooperative children requiring CT scanning or radiation therapy. Paediatric cases with difficult venous access are also being provided necessary help. Of the 1124 patients, 1075 patients were provided general Anaesthesia and 49 patients were given regional anaesthesia (spinal / epidural or combined).

All Anaesthetists were posted on rotational basis to provide expert help in the Pain and Palliative Care Division.

## PAEDIATRIC ONCOLOGY

Dr. P. Kusumakumary	Associate Professor
Dr. T. Priya Kumari	Assistant Professor
Dr. Sunu John	Lecturer

### Clinical Activities

The division takes up the primary care of patients up to the age of 14 years registered in this centre. Paediatric tumour board, with a multidisciplinary team consisting of paediatric oncologist, paediatric surgeon, pathologist and radiation oncologist is conducted every Monday and management decisions are taken by the team. The most common malignancy reported was acute leukaemia (Table:1).

Table - 1 Disease-wise distribution

Disease	Number	Percentage
Acute Lymphatic Leukaemia	103	29.09
Acute Myeloid Leukaemia	17	4.8
Chronic Myeloid Leukaemia	2	0.6
Brain Tumours	33	9.3
Lymphomas	26	7.3
Soft Tissue Sarcomas	22	6.2
Neuroblastomas	19	5.4
Wilm's Tumour	19	5.4
Bone Tumor	14	3.9
Retinoblastomas	26	7.3
Germ Cell Tumours	10	2.8
Hepatic Tumours	5	1.4
Histiocytosis	12	3.4
Carcinomas	6	1.7
Miscellaneous	37	10.5
Benign tumors	3	0.9
Total number of new patients	354	100.0
Total number of out patient visits		7296

### Academic activities

The division organized a CME programme on Practical Paediatric Oncology on 18-19 November 2000.

### Ongoing Projects

- Significance of programmed cell death in paediatric acute lymphoblastic leukaemia**  
*(Funded by Dept. of Science and Technology, Govt. of India)*  
 Co-investigator Dr. Kusumakumari
- Susceptibility to childhood acute lymphoblastic leukemia: influence of CYP1A1, CYP2D6, GSTM1 and GSTT1 genetic polymorphisms**  
*(Funded by Council of Scientific and Industrial Research)*  
 Co-investigator Dr. Kusumakumari
- Cytogenetic evaluation of genomic instability in Down syndrome patients with and without malignancies**  
*(Funded by Dept. of Science and Technology, Govt. of Kerala)*  
 Co-investigator Dr. Kusumakumari
- Molecular epidemiology of paediatric leukaemia and lymphoma in Kerala**  
*(Funded by Kay Kenail Leukaemia fund, U.K.)*  
 Co-investigator Dr. Kusumakumari

## MEDICAL ONCOLOGY

Dr. V P. Gangadharan	Associate Professor
Dr. N Geetha	Associate Professor
Dr. Sreejith G.Nair	Assistant Professor
Dr. NP. Prakash	Lecturer (on deputation for DM)
Dr. B. Mirsa Husain	Lecturer (on deputation for DM)
Dr. VS.Lali	Resident Medical Officer
	Resident Medical Officer (ad hoc)

### Clinical activities

The division is responsible for the diagnosis and treatment management of haematological and lymphoreticular malignancies and solid tumors where intensive chemotherapy is needed.

#### Patient Statistics: year 2000\*

New patients	-	615
Review patients	-	16,244
Inpatient admissions	-	935

\*This data is provided by the information systems.

### Ongoing Projects

1. A randomized multicentric study of the efficacy, safety and toleration of voriconazole versus Amphotericin B followed by other licensed antifungal therapy in the treatment of acute invasive aspergillosis in immunocompromised patients.

(Funding Agency: M/s Pfizer India Ltd)

Co-Investigator Dr. N Geetha

2. Randomized multicentric study of peginterferon alpha2a versus

Interferon-A for the treatment of patients with recently diagnosed chronic myelogenous leukemia not previously treated with interferon.

(Funding Agency: M/s Quintiles Spectral India Ltd)

Co-Investigator Dr. N Geetha

3. Multicentre study of cremophor-free, protein stabilized, nanoparticle formulation of paclitaxel (ABJ-007) in patients with stage IV metastatic breast cancer.

(Funding agency: Quintiles India Ltd.)

Co-investigator Dr. N Geetha

4. Study of the safety and efficacy of an indigenous human recombinant Interferon alpha -20 (Shanferon) in Chronic myeloid leukaemia patients

(Funding agency: M/s Shanta Biotech, Hyderabad)

Principal Investigator Dr. V P Gangadharan

Co-Investigator Dr. Sreejith G Nair

## DENTAL CARE

Dr. K.R.Nalinakumari Lecturer (on leave)  
Resident Medical officer  
(ad-hoc)(one)

This Division provides complete dental care for cancer patients. Patients are referred to this wing directly from the out patient unit or from the radiotherapy unit and from the various other units functioning in the RCC.

### Highlights of Activities

1. Basic procedures like oral prophylaxis, conservative therapy and dental extractions.
2. Minor surgeries like oral biopsies.
3. Therapeutic management of pre-cancerous and other oral lesions.

4. Management of temporomandibular problems like trismus occlusal adjustments.
5. Reconstructive procedures like construction of maxillofacial prosthesis.
6. Pre and post radiation care of teeth.
7. Management of oral problems for patients undergoing chemotherapy like ulcers, toothache etc.
8. Preparation of biteblocks and moulds are also undertaken.

**Table 1. Patient attendance during the year 2000 - 01**

Total number of cases	692
Total number of teeth extracted	5021
Total number of Biopsies taken	410
Total number of pre & post radioactive care of teeth	754
Total number of new post-radioactive care cases	229
E.C.D.C. Patients	7
C.C.L. Patients	9
Pre-cancer patients	26
Oral prophylaxis done	45
Conservative therapy	4
Occlusal adjustments	2
ESI patients	10

**Table 2. Site-Wise distribution of biopsies done In 2000-01**

Sites	No.	Percentage
Right Buccal mucosa	78	18.5
Left Buccal mucosa	97	23.0
Right commissure	8	1.9
Left commissure	13	3.1
Hard palate	11	2.6
Soft palate	5	1.2
Right retromolar region	6	1.2
Left retromolar region	7	1.7
Dorsum of tongue	19	4.5
Left border of tongue	26	6.2

Right border of tongue	42	10.0
Under surface of tongue	4	0.9
Floor of mouth	13	3.1
Left lower alveolus	20	6.9
Right lower alveolus	20	4.7
Left upper alveolus	8	1.9
Right upper alveolus	6	1.4
Left lower sulcus	5	1.2
Right lower sulcus	3	0.7
Left upper sulcus	1	0.2
Lower lip	19	4.5
Upper lip	2	0.5
Oropharynx right	1	0.2
<b>Total</b>	<b>422</b>	<b>100.00</b>

## CLINICAL SERVICES AND MEDICAL RECORDS

Mr.F. Raveendran Nair	Administrative Officer (Clinical Service)
Mr.V.Surendran Nair	Asst. Public Relations Officer
Mr.G. Rajasekharan Nair	Medical Records Officer

This division is entrusted with:

1. Public relation and front office management
2. Medical records maintenance
3. Patients accounting and billing

The major activities under the reporting year are as follows:

- ◆ New case registration
- ◆ Front office management
- ◆ Follow-up and other patient correspondence
- ◆ Case sheets filing and retrieval



- Collection and distribution of investigation reports and X-rays
- Ward admission and discharge services
- Pay ward booking and allocation
- Preparation of certificates
- Management of Medical Reimbursement bills
- Conduct of Private Patient Clinic
- Conduct of follow-up clinics at ECDC, Emakulam and other centres
- Co-ordination of CCL, ESI, CGHS and other health schemes
- Maintenance of death register and reporting of death
- Coding and indexing
- Patient welfare activities including guidance and assistance for getting financial aid from various bodies.

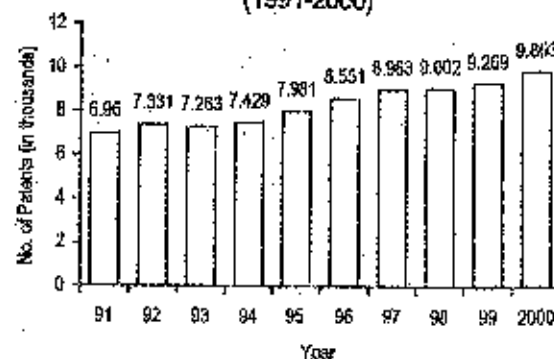
Over the years, there has been an increase in the patient registration (Fig 1). New and old cases reported in the current year and the previous years are given in Table 1. During the reporting year, RO provided free investigation and treatment except chemotherapy to 46% of total patients reported. Seventeen percent of patients have been provided both investigation and treatment at a concessional rate under "M" category, 13% of patients opted for "P" category and 24% registered under "O". (Fig 2).

**Table 1. Patient attendance during current and previous year**

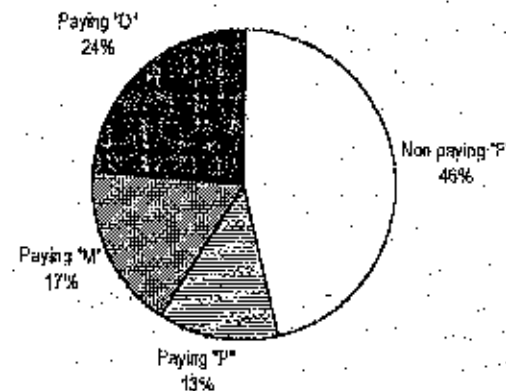
	Previous year 1999	Current year 2000
New cases registered	9239	9603
Review cases	92685	93142
- Radiation Oncology	71678	65828
- Surgical Oncology	2361	2534
- Medical Oncology	11094	16861
- Paediatric Oncology	7552	7919
Total patients (New & Old)	101954	102945
Daily average patients	340	343
Average attendance per patient	11	11
No of inpatient admission	7623	8216
- Radiation Oncology	3082	3294

- Surgical Oncology	838	868
- Medical Oncology	2373	2619
- Paediatric Oncology	879	962
- Palliative Care	451	473
Average in patients length of stay	10	10
Hospital Deaths	509	407
Total number of 'P' patient	724	1432
New 'P' patient	549	1265
Old case transferred as 'P' patient	175	167
Total number of review 'P' patient	2641	7920

**Fig 1 Number of new patients registered during the last 10 years (1991-2000)**



**Fig 2 Number of paying and non-paying cases - 2000**



**Table 2. District-wise distribution of new cases during previous and current year**

District	Previous year (1999)		Current year (2000)	
	No	%	No	%
Trivandrum	2650	(28.6)	2736	(27.9)
Kollam	1892	(20.4)	2009	(20.5)
Pathanamthitta	611	( 6.6)	638	( 6.5)
Alappuzha	474	( 5.1)	478	( 4.9)
Kottayam	257	( 2.8)	478	( 4.9)
Idukki	104	( 1.1)	134	( 1.4)
Emakulam	734	( 7.9)	748	( 7.6)
Trichur	459	( 5.0)	498	( 5.1)
Palghat	262	( 2.9)	282	( 2.9)
Malappuram	335	( 3.6)	348	( 3.5)
Wayanad	31	( 0.3)	44	( 0.4)
Calicut	31	( 0.3)	242	( 2.5)
Kannur	298	( 3.2)	351	( 3.6)
Kasargod	45	( 0.5)	31	( 0.3)
Other states	921	( 9.9)	999	(10.2)

#### Activities of Public Relation Wing

1. Laison with print and electronic media
2. Co-ordinated conference and public functions of the centre like commissioning of Brachytherapy, Indo American Seminar, ATMA, Malabar cancer control Programme, Cancer Free Palghat etc.
3. Press release was issued to announce the plans, programmes and facilities of the centre.
4. Published 3 issues of house magazine (Samanwayam), which contain news items, article of staff members, and other internal communication materials. This magazine has been circulated to all staff members, major institutions, opinion leaders etc.

5. Guidance and assistance had been given to patients for getting financial aid from Prime Ministers Relief Fund, Chief Ministers Relief fund, Gramapanchayath, Philanthropic organizations etc. More than 5000 certificates have been issued for the same Certificates for getting Electricity connection and other domestic affairs have also issued. Assistance had given to patients for getting financial aid from Royal Family, Melam Masala, Asraya, Individuals, and charitable organizations.

6. Majority of the patients are supplied with certificates for getting railway concession.
7. Assistance had been given to RCC officials to publish article and to broadcast talks.
8. Received complaints and feed back from patients about the services and brought to the notice of concerned officials.
9. Coordinated the visit of dignitaries like Prof. Harold Warmus, Nobel Laureate, Prof. Struffer, Prof. Stephen Growth, Dr. C.P. Thakur (Health Minister, Govt. of India), Shri V.C. Kabeer ( Health Minister, Govt. of Kerala), Mr. Allen Landers (Hollywood Actor), General Jayswal (DG, AFMS), Dr. P. Kihuse (IARC).
10. Guidance had given to various trainees coming to our centre from other institutions.
11. Guidance had given to Mr. Sunderasan, MBA Student, Coimbatore Institute of Management and Technology to prepare a project report on Human Resource management.
12. A monthly newsletter "RCC News" has been published in Association with Destination Kerala.
13. Ambulance service at a reduced rate has been arranged with the help of some volunteer organization.
14. Blood, Human resource etc had been arranged for poor patients with the support of philanthropic organizations.
15. Wide publicity had been given to Cancer Care for Life scheme through print media, direct mailing etc and 494 new members joined during this period. 180 patients had benefited from C.C.L. scheme during 2000-2001.

## Training

1. Fifteen students of M.App.Sc. Medical Documentation course from Mahatma Gandhi University, Kottayam had completed their practical study for a period of 15 days about the Medical Records Organisation and Management through the division.
2. Three students of M.App.Sc. Medical Documentation course of M.G. University, Kottayam had completed their project work a period of 6 months through this division.

## NURSING SERVICES

Sr. Vijaya Puthusseril	Chief Nursing Officer & Assoc. Professor
Mrs. Graceama Joseph	Nursing Superintendent
Mrs. Geetha S	Nursing Supervisor
Mrs. Annamma Jacob	Nursing Supervisor

Routine nursing services are provided to the outpatient services of various specialities along with day care services for the administration of chemotherapy. On an average 120 patients receive chemotherapy through the day care unit, which has been handled without any blemish by the nursing division. The other areas where specialized nursing services are provided include the pain and palliative care division, paediatric oncology and breast clinic. A variety of complementary therapies are provided to improve the quality of life. Home care procedures are demonstrated to patients who require long-term care at home.

Periodical training programmes are organized to update the quality of nursing care. Monthly meetings are held for head nurses and staff nurses separately.

### Orientation Programme for nursing students

18th May 2000	Orientation training for BSc (N) students, College of nursing, Kottayam
31st May 2000	Orientation & observation update to nursing & midwifery students from Sweden under global

health exchange programme; affiliated to College of Nursing, Trivandrum.

15/200-30/6/2000

Clinical posting in oncology nursing for BSc (N) students of college of nursing, Trivandrum.

1st Dec. 2000

Orientation training for MSc.(N) students of Omaya Achi college of nursing Avadi, Chennai.

30/1/2001-9/2/2001

Clinical posting in oncology nursing for BSc (N) students of college of nursing, Trivandrum.

31st March 2001

Orientation training for BSc (N) students of Sree Mookambika College of Nursing, Kulasekharam, Tamil Nadu.

### Training Programme in Oncology Nursing

The Division organized the following training programmes for staff Nurses/ Head Nurses/ Nursing Superintendents working under Directorate of Health services sponsored by DGHS, Govt. of India.

1. 'Oncology Nursing update' for staff Nurses from 1st - 11th August 2000.
2. 'Oncology Nursing and Quality care' for senior Nurses/ Nursing Superintendents from 16th - 26th August 2000.
3. 'Oncology Nursing - challenge for Nurses' for staff Nurses from 19th - 29th March 2001.
4. One-month training programme in Palliative care for registered nurses & ANMS from outside as and when requested.

### Visitors

1. Dr. Michael J. Morgan, Asst. Prof. College of Nursing, Wayne State University provided Orientation on Nursing Research techniques to Nursing Staff on 5-6 Jan 2001.
2. Ms. Sujana Chakravarthy, Asst Secretary cum SNA Advisor, TNAJ visited RCC on 30/7/01.

### Awards

Ms. Sona P.S	Secured first Rank in MSc.(N) from College of Nursing, Trivandrum
Ms. Sharo Thampy	Successfully completed MSc. (N) from Christian Medical College, Vellore

## PHARMACEUTICAL SERVICES

Dr. Gangadevi T Medical Officer (in-charge)  
Sri. Sivasankara Pillai Pharmacist cum Storekeeper

The functional unit of the division consists of two sections.

### 1. Central Stores

The objectives of this section are to render quality medicines/equipments, chemicals/reagents and other disposable items for outpatients, inpatients, diagnostic, research and palliative care divisions periodically. Drugs and chemicals are dispensed on weekly requirements.

The Central store possess 46 Anti cancer drugs, all first and second line of antibiotics, analgesics, anti-pyretic, anti-emetic, anti-histamins, diuretics, laxative drugs and costly disposables like removal suction and cavafix and pain and palliative drugs like morphine sulphate tabs, control released tabs, and liquid morphine. The main functions of central stores are appended below.

- Receipt of all drugs, disposable items, minor equipments, X-ray films/chemicals, Laboratory chemicals/reagents, cleaning materials, clothing for patients/ staff from different suppliers as per purchase orders.
- Receipt/ issue of local purchase items to meet emergent requirements in wards/various divisions.
- Stock entry as per invoice is made in to the computer stock from time to time.
- Issue of anti cancer drugs, antibiotics, fluids and other disposable items to pharmacy for patient care service.
- Issue of all drugs/ disposable (except anti cancer drugs) cleaning materials are issued for all wards/ departments through their weekly demand after the perusal of Medical Officer i/c/ supdt./ authority concerned.
- Maintenance of stock and accounts.
- Stock verification on a monthly basis quarterly by audit authorities and yearly.
- Preparation of all types of indents in time.

Purchase of all drugs and other requirements are mainly through tender system. The requirements will be calculated on the basis of average monthly consumption recorded during the last 12 months. Local purchases are made when required to meet the exigencies of drug. Equipment for a particular period or for a particular case is purchased only after the sanction accorded by supdt/ Adcl. Director.

A total of 200 patients received free treatment through the CCL programme, 227 patients received benefit of free treatment through ESI programme.

A morphine-manufacturing unit is being commissioned shortly to meet the requirement of palliative care unit. Morphine tab/control released tab have been received during the reporting year from WHO. The drug is being issued to all peripheral centers as per the existing regulations. A comparative statement of free issue for the last 3 years is also appended below.

**Table 1: Statement of free issue of morphine during the last 3 years**

	1998-1999		1999-2000		2000-2001	
	Qty.	Amount(Rs.)	Qty.	Amount(Rs.)	Qty.	Amount(Rs.)
Morphine 10mg	163905	139320.00	382390	325866.00	508640	457776.00
Morphine 20mg	16525	18468.75	1275	1488.25	—	—
Morphine 60mg	—	—	—	—	9110	40995.00
G.Total	180430	157798.75	383665	327332.25	517750	498771.00

**Table 2: Purchases during 2000-01**

Cost of items purchased in central stores	Rs.	4,04,81,605.09
Cost of drugs issued free	Rs.	47,30,021.65
Cost of anti cancer drugs issued free	Rs.	41,40,000.00



## (2) Pharmacy

The pharmacy outlet functions daily from 8 am to 4 pm. The most noteworthy aspect of this service is the supply of drugs far below the maximum retail price, which is a real blessing to all patients. The difference in cost of drugs range from 10-40% in comparison to other medical shops.

## PAIN AND PALLIATIVE CARE

Dr. Rachel Cherian Koshy	Associate Professor
Dr. Vasudovan Mappat	Anesthesiologist
Dr. R. Manjula	Resident Medical Officer
Dr. P. T. Latha	Lecturer in Sociology
Ms. Kumary Thankom	Staff Nurse in charge

Services are received from Anaesthesiology staff on rotational basis for interventional pain management.

### Out Patient Clinic

A total of 10102 patients (2079 new patients and 8123 repeat visits) attended the pain and palliative care outpatient clinic. The clinic functions on all weekdays. The team comprises of doctors, nurses, social worker, nursing assistants and volunteers.

Oral morphine Consumed	-	8.093kgs
<b>Interventional Pain Management</b>		<b>No (20)</b>
Manidibular nerve block	-	7
Glossopharyngeal nerve block	-	1
Scan infiltration	-	3
Epidural block	-	3
Brachial plexus block	-	1
Sphenopalatine ganglion block	-	1

Intercostal block	-	2
Coeliac plexus block	-	2
<b>Continuous Infusious of Analgesics</b>		
Patient controlled analgesia	-	4
Silastic balloon infusion	-	3

### Inpatient Service

Inpatient wing is a 12-bedded unit having both general ward and day ward. Only those patients who are registered in the pain clinic are admitted. Those patients who need acute symptom relief during the course of active treatment and terminally ill patients are also admitted. A total of 444 patients were admitted in the palliative care ward. Of them 119 patients were given terminal care. The remaining 325 patients were either referred to hospice or sent back home once their symptoms were controlled.

### Day Care Service

Diversional activities like TV watching, listening to music, playing carroms, engaging in craft works is offered for patients and their carers.

### Support groups

A support group for breast cancer patients is conducted on every Saturday forenoon with the help of visual aids. Pre and post mastectomy patients benefit from sharing concerns, clearing doubts, learning post mastectomy exercises and arm care. Stress caused by disturbed body image is alleviated to some extent by family counseling and provision of breast prosthesis. Breast prosthesis is made in RCC (beaded foam material) and provided to 265 patients. Information regarding silicon breast prosthesis is also provided. Patients suffering from alopecia due to chemotherapy are provided information about wigs. Support group for carers of in-patients of Palliative Care ward meet once in a week mainly to help them to cope with patients' disease condition, allay anxiety, clear the doubts and remove the myths regarding disease, death and dying.

### Lymphoedema Care

Services for lymphoedema patients are available on all workdays in the forenoon. Services include teaching exercise, massage, providing hosiery, pneumatic compression pump and such service were provided to 240 patients.

### Home Care

Palliative Care division of RCC is the foremost one to launch a hospital based home care service in Kerala. The initial home care service of once in a week is now extended to thrice a week or on call covering Trivandrum district with a team of nurse, social worker, doctor and volunteer. Home care became more regular as we got our own vehicle donated by a US based charity. Patients seen at home are provided comprehensive nursing care, pain and symptom relief evaluation, counselling and training the carers on wound care, Ryle's tube feed etc. Needy patients are provided with comfort equipments like water bed, air cushion etc. Sick patients found at home are transported back to hospital if needed. The service is rendered free of cost and 140 patients were taken care through home care service.

### Hospice Care

A total of 24 patients were referred to Karunya Visranti Bhavan hospice run by charity at Kattela. Palliative Care team provides regular visit once in a week for patient care, support, medications and training programmes for this hospice staff. We also have links with Mar Thoma Hospice at Kottarakara and Holy Cross Hospice at Cochin.

### Peripheral Centers

Peripheral Pain and Palliative Care clinics, which run by support of RCC include the following.

1. Pain Clinic at District Hospital, Kollam
2. Pain Clinic at ECDC, Ernakulam,
3. Pain Clinic at ECDC, Palakkad,
4. Pain Clinic at District Hospital, Kozhenchery
5. CSI Hospital, Attingal.
6. Pain Clinic at District Hospital, Palakkad

The Schedule of visits of peripheral clinics are as follows.

First Saturday of every month - District hospital Kollam and CSI hospital, Attingal.

2nd and 4th Saturday of every month - District hospital, Ernakulam. The other peripheral clinics have full time trained doctors providing pain relief service.

**Counselling Service** is offered for referred and needy patients.

**Complementary therapy** including music, relaxation, simple massage, magnet therapy and TENS are extended to needy patients.

### Volunteer Service

Services of a women's volunteer group "Asraya" and a full time male volunteer are available on working days. They provide emotional support, practical and financial help and aid in home care and day care service under the supervision of staff.

### Rehabilitative Services

Provide financial help for continuing education of bereaved children, finding means of lively hood. For eg:- coir machine, sewing machine, funding a petty shop are being provided to bereaved families through volunteers.

### Training/ Orientation Programmes

1. One month hands on training was given to 5 registered nurses and 3 doctors
2. Dr. F. Joseph Memorial CME on Palliative Care October 29, 2000.
3. Weekly academic activities for Palliative Care team on every Saturday.
4. Orientation programme for MSW students: Loyola College, Trivandrum, Vimala College Trichur
5. Orientation Programme for house surgeons, IV year Medical Students, Trivandrum.
6. Orientation Programme for hospital management students, MG University, Kottayam.

### International Workshop on Management of Cancer Pain and Palliative Care 19-23 June, 2000

Two workshops on cancer pain management were held on 19-23 June 2000 at RCC, Trivandrum with overseas faculty (Dr Stuart A Grossman, Professor of Neuro-Oncology and Ms Beth Gregory) from John Hopkins Medical Institution, USA and local faculty from RCC, Trivandrum and CMC Vellore. This workshop was a huge undertaking for the Palliative Care Division considering the paucity of manpower and resources. Each

workshop was attended by 45 delegates consisting of doctors from various specialties, nurses, pharmacists and social workers from various parts of India, UK and Indonesia.

### Research Projects

1. Cost-effective methods of continuous infusions of analgesics without the use of sophisticated pumps.
2. The efficacy of magnet therapy for pain and neurological problems.

### Eye Donation Service

The service of eye donation materialized in Palliative Care Division, RCC as a joint venture of patient, family, Palliative Care team, Chaitanya Eye Hospital, Trivandrum and Ophthalmic Hospital, Trivandrum. In the current year, 3 patients consented.

### Visitors from abroad

1. Ms. Catherine Ashmore, Nurse Consultant UK Aug. 2000 - Mar 2001.
2. Ms. Helena Taania and Ms. Karolina Brodch, Nursing Students from Sweden as observers - Oct. - Nov. 2000
3. Ms. Elizabeth Wright - Clinical Nurse Specialist in Chemotherapy, St. George's Hospital London, Jan 2001.
4. Dr. David Frampton - Feb 2001, Medical Director of a Hospice centre, Essex, UK.

## BLOOD BANK

Dr. Jayalekshmi P  
Mr. Meera Sahib P

Resident Medical Officer  
Senior Scientific Officer

During the reporting year there has been an increase in the number of component preparations such as packed red cells, platelet rich plasma cells. One Refrigerated Centrifuge manufactured by the International Equipment Company was installed on September 2000. A -75°C Deep Freezer with 170 liters capacity manufactured by Hitech

Instruments and Systems was also installed on October 2000.

### Camps and training

1. Blood grouping camp conducted on 30 April 2000 at Thekkumoodu Residents Association, where 33 people were grouped.
2. Blood grouping camp conducted on 10 June 2000 at N.S.S Karayogam, Pappanamcode, where 181 people were grouped.
3. Blood grouping camp conducted 20 Aug. 2000 at Pazhaya Road Residents Association, Medical College, where 83 people were grouped.
4. A two weeks training given to 20 BSc MLT students, School of Medical Sciences, M.G. University, November-December 2000.

### Blood Bank Statistics

Blood grouping	- 16500
Cross matching	- 6008
Blood donors	- 5102
Hbs Ag +ve donors	- 108
HIV +ve donors	- 5
HCV +ve donors	- 3
VDRL +ve donors	- 8

### Components Prepared

Packed Red Cells (PRC)	- 4427
Platelet Rich Plasma (PRP)	- 3064
Single Donor Plasma (SDP)	- 440
Fresh Frozen Plasma (FFP)	- 26
Platelet pheresis	- 85

## CYTOPATHOLOGY

Dr.Chandralekha.B	Professor & Additional Director
Dr.Elizabeth K. Abraham	Professor
Dr.Jayasree. K	Associate Professor
Dr.Rekha A. Nair	Associate Professor
Dr.Anitha Mathews	Assistant Professor
Dr.Thara Somanathan	Assistant Professor
Dr.Nileena Nayak	Assistant Professor
Dr.Raveendran Pillai. K	Assistant Professor
Dr.Lakshminarayanan .K	Assistant Professor
Dr.Lakshmi S	Lecturer
Mr. Sujathan K.	Sr.Cytotechnologist
Mr. Jayalal K.S	Cytotechnologist

### Diagnostic Services

#### Gynaec Cytology

Cervical Smears were examined from 2562 cases of which 2159 were from various projects, which included a comparative study of Pap smear, Colposcopy and biopsy. 326 cervical intraepithelial lesions (CIN) were reported (CIN I- 260, CIN II -37, CIN III- 29). 52 cases of invasive carcinomas were reported.

#### Non-Gynaec and Aspiration Cytology

From a total of 5979 fine needle aspiration specimens, 2022 malignancies were diagnosed. The major sites of aspiration were lymphnodes (1769), thyroid (1292) and breast (1094). Total number of malignancies at various sites is depicted (Fig 1a). Some of the rare and interesting tumors/ lesions diagnosed by cytology are Paraganglioma,

Gout, Malignant Melanoma metastasis to testis, Transitional cell Carcinoma metastasis to lung, Papillary Carcinoma thyroid metastasis to pleural fluid, Sebaceous Carcinoma, Metaplastic Carcinoma breast etc. Fine needle aspiration slides of 177 cases from various Early Cancer Detection Centres were reviewed of which 26 were malignancies.

#### Fluid Cytology

1454 samples of aspirated fluids from body cavities and natural secretions were examined. Maximum number of samples were Cerebro Spinal Fluid.

#### Sputum Cytology

Sputum samples were examined from 943 patients by collecting 4-5 samples from each patient and making 2 smears from each sample. A total of 55 malignancies were reported. These include adenocarcinoma (27), Squamous cell carcinoma (14), poorly differentiated non-small cell type carcinoma (7), Small cell anaplastic carcinoma (2). There were 5 cases of suspicious of malignancy.

#### Histopathology

Histopathological examinations were done in 8093 cases of which 5095 cases were surgical specimens from the center and 2998 were review cases of patients referred from other hospitals. Immunohistochemical staining was performed in 1182 cases. Frozen section facilities were also provided in relevant cases. Estrogen and progesterone receptor studies were carried out in 548 cases of breast carcinoma. A total of 5256 malignancies were reported. The predominant sites of malignancy were oral cavity, breast, cervix, GIT and lymphnodes (Fig 1b). There were 328 cases of lymphomas of which 267 were nodal and 61 were extranodal in nature. Immunophenotyping were carried out in all lymphoma cases.

Some of the rare and interesting lesions were Primitive Neuroectodermal Tumour cervix, colostomy stoma site amoebiasis, Collecting duct Carcinoma kidney, Malignant clear cell Adenofibroma ovary, Malignant Brenner Tumour ovary, Malignant Melanoma involving meninges, Myoepithelial Carcinoma breast, Epithelial Angiosarcoma arising in mediastinal teratoma, Malignant Lymphoma infiltration in Papillary Carcinoma thyroid, Amyloidosis bone marrow and liver, True Histiocytic Lymphoma- intestine etc.



## Haematopathology

Materials studied include 2239 bone marrow aspirates and imprints, 740 peripheral smears and 172 slide reviews. There were 569 malignancies; most predominant was Acute leukemias (317). ALL - 164 and AML - 140. (Fig 1c). Special stains for typing leukemias include POX, PAS, NSE, and CAE. Immunocytochemical staining using CD7, CD19, CD33, CD10, CD3, CD20, LCA. Immunotyping were done on 76 of cases paediatric leukemias.

### Other types of malignancies include

CML-blast crisis	8
CMML (Chronic Myelomonocytic leukemia)	3
PCV (Polycythemia Vera)	1
HCL (Hairy Cell Leukemia)	1
Myelofibrosis	1
Plasma cell leukemia	2

### Academic activities

The staff of the division conducted teaching sessions and participated in the daily morning and noon clinics, monthly special clinics, and other academic activities of the centre. Some of the staffs were invited to conduct CMEs/ Workshops/Seminars or to give orations in different centres in India. Full time cytotechnician and cytotechnologist training courses of 6 months and one year duration respectively were included as part of man-power generation in cancer control activities. This division is accredited by the Indian Academy of Cytologists (I.A.C) for diagnostic and examination purposes.

We are also involved in the teaching and training programmes of medical and paramedical students of Medical College, Trivandrum and paramedical students of Mahatma Gandhi University, Kottayam. Short-term training courses of one-month duration were also imparted to pathology postgraduates of Dental College, Trivandrum, and Medical colleges, Calicut and Kottayam.

### Research Projects

1. **Molecular epidemiology and risk factors for childhood leukemias in Kerala.**

*(Collaboration with Dept. of Hematology, Leeds UK)*

**(Funding Agency: Kay Kendall Leukaemia fund, UK)**

Coinvestigator Dr. Rekha. A. Nair

2. **Cell surface changes in leukemia cells study using plant lectins**  
*(Funding Agency: STEC, Kerala)*

Coinvestigator Dr. Rekha. A. Nair

3. **Indigenous plant lectins and their use as reagents in immunology and pathology.**  
*(Funding agency: ICMR Project)*

Coinvestigator Dr. Rekha. A. Nair

4. **Isolation of plant lectins and its application in cancer pathology**  
Sujathan.K.

5. **Evaluation of Metal based Ayurvedic formulation in AML M3, ALL, NHL and Multiple Myeloma conducted by Ayurvedic Research Unit, RCC**

Dr.Nileena Nayak

### Awards/ Fellowship/Training/Membership

#### Dr.B.Chandralekha

1. Earnest Fernandez Award for Diagnostic Slide Seminar - 30th Annual Conference of IAC, Nagpur, November 2000.
2. Governing body member of Regional cancer association.

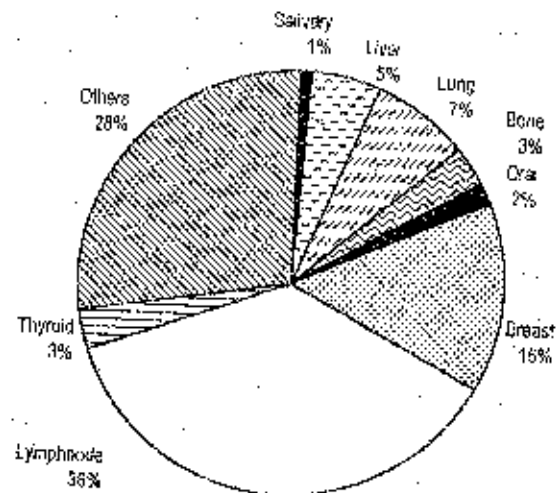
#### Dr. Elizabeth k. Abraham

1. EBCC Fellowship to attend second European breast cancer conference at Brussels, Belgium September 2000
2. Governing body member of Regional cancer association

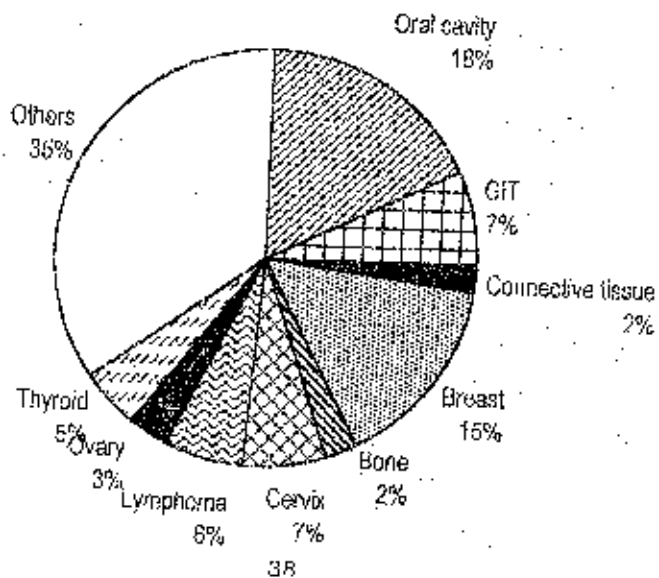
#### Dr. Lakshminarayanan. K

1. Invited to Manipal Hospital diagnostic services as Technical expert in March 2000.
2. Invited to Christian fellowship community health care centre, Ambilica as Technical expert in August 2000.

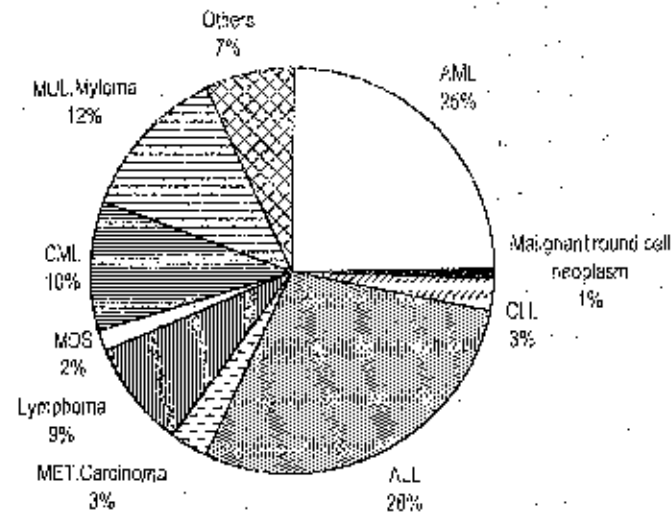
**Fig 1: Malignant lesions in major sites**  
**a) Aspiration Cytology (n = 2022)**



**b) Histopathology (n = 5256)**



**c) Hematological malignancies (n = 569)**



## IMAGEOLOGY

Dr. K. Ramachandran	Professor
Dr. A.S. Krishnakumar	Associate Professor
Dr. M. Venugopal	Lecturer
Dr. P. Bimalkumar	Lecturer

Diagnostic and interventional studies done during the period under report are as follows:-

Plaine X-ray	-	13,978
Barium swallow	-	175

Barium meal	-	12
Myelogram	-	12
Mammogram single	-	282
Mammogram double	-	1156
Ductogram	-	4
CT Scan	-	5697
C.T. & guided procedures	-	160
Ultrasound	-	6440
Doppler studies	-	131

#### Academic activities

Training in the modern imaging techniques was imparted to four WHO trainees for 6 weeks. Two dental postgraduates and postgraduates from Dept. of Radiodiagnosis and other specialities in Medical College, Trivandrum also attended the training programmes. Training continued for CRA, Dip NB, Post graduates in Ultrasound (10 doctors).

The film reading sessions every day morning, the tumour boards, the monthly meeting of Trivandrum Radiobiology Club, Pulmonary Radiobiology Club of SUT Hospital, Trivandrum provided opportunities for discussion of interesting and problematic cases for diagnosis. Interesting and rare cases were added to RCC film library.

### NUCLEAR MEDICINE

Dr.V.M.Pradeep	Associate Professor
Dr.A.Sreekumar	Assistant Professor

The division provides diagnostic and therapeutic facilities using open radioactive sources. The center now attracts a large group of patients who come from various districts of Kerala, South Tamil Nadu and Karnataka; Male and Sri Lanka. The work includes in-vitro assays, various types of scans, and treatment for thyrotoxicosis and thyroid

cancer as well as treatment of bone pain. This is the only center in the state that provides high-dose therapy using radioactive sources. The in-vitro assay section was the first of its kind to start functioning in the state.

#### Thyroid Clinic

The major part of the work comprises evaluation and treatment of thyroid disorders. Facilities for comprehensive diagnostic and therapeutic options for various thyroid disorders include thyroid scanning, ultrasonography, in-vitro assays, and radioiodine therapy. 10030 cases attended the thyroid clinic as new and follow-up cases. These were primarily cases of thyroid cancers and thyrotoxicosis. The other cases were referred for various investigations such as thyroid function tests, thyroid uptake and scan. The commissioning of the new ultrasound machine has improved the patient care provided.

Table 1. Thyroid investigations

Category	Number
Thyroid Scans + Uptake	4828
Thyroid Ultrasound	456
Thyrotoxicosis	182
Ca Thyroid	362

Thyroid scans are done with radioiodine ( $I-131$ ), technetium ( $Tc99m$ ). Large dose, whole body radioiodine scans are done for Carcinoma thyroid. Both rectilinear scanner and gamma camera are used for thyroid scanning. An ECIL uptake system is used for thyroid uptake studies.

#### Immunoassay

The Immunoassay section performed 50,289 assays of thyroid hormones, tumor markers and miscellaneous assays. These included cases for thyroid evaluation, tumor markers, and other assays. There were 29676 cases for routine thyroid function tests.

#### Imaging - (Gamma Camera)

The division has a Siemens Gamma Camera, Basicam Model with a microdelta computer. This equipment is used for static and dynamic scintigraphy. Bone scans for cancer patients form the main work on this

instrument. Dynamic renal studies including paediatric renal evaluation are the second most important. Tetrofosmin imaging was introduced recently. Technetium for the purpose of these scans is eluted from Molybdenum using Mo-Tc generator from BARC.

**Table 2. Breakup of Immunoassays**

Assay	Number (51625)
T3	8897
T4	8897
TSH	8897
HCG	7842
AFP	1329
CEA	2106
CA-125	2133
FT3	1422
FT4	1422
ATG	1311
AMC	1311
CORTISOL	293
GH	180
PRG	54
TESTOSTERONE	285
17-OH.PROGESTERONE	145
TG	2023
FSH	460
LH	375
PRL	597
PSA	640
PTH	648
ACTH	88

**Radionuclide scans in the Gamma Camera**

Bone	1141
Renal	290
	42

Liver	20
Meckel's	5
99mTc(V) DMSA	8
DMSA-renal	1

**Radionuclide therapy**

Radionuclide therapy section is one of the largest in the country. Radioiodine therapy is routinely given for thyrotoxicosis and Ca Thyroid. The division has a full-fledged radionuclide therapy ward with delay tank for the treatment of thyroid cancer. Therapy was given for 184 cases of thyrotoxicosis and 208 cases of Ca Thyroid. The division has facilities for bone pain palliation using 89-Sr.

**Academic activities**

Teaching medical and paramedical students and assistance provided for post-graduate students.

**RADIATION PHYSICS**

Dr.V.Padmanabhan	Professor
Sri.C.A.Davis	Associate Professor
Dr.Raghu Ram K.Nair	Associate Professor
Sri Thayal Singh Elias	Assistant Professor
Sri.P.Raghu kumar	Lecturer
Sri.Giri Purushothaman	Lecturer in Electronics Engineering Lecturer (ad hoc) (one)

**Clinical physics: Highlight of activities**

Calibration of Radiotherapy equipments  
Quality Assurance

Treatment planning  
 Dose Computation  
 Radiation Safety in Radiotherapy, Imageology and Nuclear medicine.  
 Intercomparison studies using TLD (WHO/BARC)  
 Daily maintenance, checking and repair of all teletherapy and brachy therapy equipments.  
 Intraoperative, intraluminal and mould brachytherapy with micro Selectron HDR.  
 Monthly monitoring of radiation levels in Nuclear Medicine.

Patient services	No (7727)
External Beam Radiotherapy	7039
Brachytherapy	694
<b>Conventional</b>	
Interstitial Implantation	69
Intracavitary implantation Oesophagus	20
Mould	14
Manual afterloading - Gynae	40
Selection LDR - Gynae	132
<b>Micro selectron HDR</b>	
Gynaec	317
Oesophagus	76
Nasopharynx	5
Rectum	4
Mould	17
<b>Mould Room</b>	
Orfit shell	566
POP shell & Head rests	15

Custom made mantle shield	5
Mould	25
Wax bolus	95
Bite block	158
<b>Total</b>	<b>364</b>

#### Academic Activities

Teaching and training in Medical Physics were imparted to the following categories of students. (i) Diploma in Radiological technology (ii) B.Sc. (MLT), DMLT (iii) B.Sc.Nursing (iv) MSc Nursing (v) MBBS (vi) DMRT (vii) DMRD (viii) MDS (Oral Radiology) (ix) MD Radiotherapy (x) MD & Dip NB (Radio diagnosis)

#### Training programme

1. Conducted DRT refresher programme for upto March 2001, and participated a total of 89 students in Imageology/Nuclear Medicine and 22 students in Radiation physics/RadioTherapy. Dr.Paghuram.K.Nair and Dr.K.Ramachandran coordinated it.
2. Conducted BARC Dip.R.P.Trainees.
3. Mr.Santhosh Shivaraj Birada & Mr.Santhosh Shivaraj Birada & Mr.Pramod Kumar Sharma spent from 30.05.2000 to 7.07.2000 in the division of Radiation Physics and Radiotherapy.

#### Research Projects (Completed)

1. **Standardisation of treatment plans for treatment of Ca Cx using micro selection HDR by Ms.Letty K.J.& Bindu.J.G. by M.Sc. Applied Physics, Dept of Physics, Kariavattom (2000).**  
 Guides: Mr.B.Saju, Mr.P.Raghu Kumar, Dr.V.Padmanabhan, Dr.V.K.Vaidyan
2. **Micro controlled gamma meter by Mr.G.Manesh, MSc Applied Electronics, Bharathiyar University (2001).**  
 Guides: Mr.Giri Purushothaman RCC, TVM & M.K.GopalaKrishnan, SNR Son's college Colmbatore

#### Research Project (ongoing)

1. Dose measurements in patients undergoing diagnostic X ray

### examinations including special investigations.

(Funded by AERB).

Principal Investigator      Dr.RaghuRam.K.Nair

Co.Investigators              Dr.V.Padmanabhan  
and Dr.M.Krishnan Nair.

Studies were completed on 384 patients for various organ doses. 312 patients were covered in simulation procedures. More than 100 patients have been covered in special investigations. The study will be completed by December 2001.

### 2. Natural Background Radiation registry (NBRR) at Karunagappally, Kollam.

(Funding Agency : Health Research Foundation, Kyoto)

Co.Investigator              Dr.RaghuRam.K.Nair

TLD measurements in 12 Panchayats completed. SSNTD dosimetry was nearing completion.

### 3. Development of indigenous after loader system in the treatment of Ca Cx.

Principal Investigator      Mr.T.S.Elias

Co.investigators:            Dr.V.Padmanabhan, Mr.C.A.Davis,  
Dr.M.Krishnan Nair.

The system will be used on patient only after clearance from ethical committee, RCC and in the presence of BARC & AERB officials.

### Meetings Organised

Eleventh annual meeting of KAMP was conducted on 15.10.2000 at Ernakulam. 6th Dr.T.P.Ramachandran memorial oration on "Quality assurance in medical imaging" was delivered by Dr.T.Kesavan, Prof of Radio diagnosis".

### Visitors

1. Vladimir Ivanovski, Siemens Product Specialist gave a talk on Net working though LANTIS on 17.10.2000.
2. Mr.Somnath Ray, Elekta gave a talk on "Precise Digital Linear Accelerator" on 18.10.2000.



Remote after loading brachytherapy unit designed by RCC





Commissioning of the RCC designed brachytherapy unit by Padmasree Dr. C.P. Thakur in the presence of Sri E.K. Nayanar, Hon'ble Chief Minister of Kerala.

3. Prof. Keifer gave a talk on Raman spectroscopy on 9.1.2001 at RCC.

#### Ph.D Thesis Supervision

1. Mr.C.A.Davis submitted thesis "Studies on the physical parameters in the treatment of malignant disease by using external radiation beam" (submitted to University of Kerala Aug 2000).

Guide Dr.V.Padmanabhan.

2. Mr.Madhu, M.G.College, Trivandrum, Development and characteristics of new TLD Materials, University of Kerala.

Co-guide Dr.V.Padmanabhan

3. Mr.T.S.Elias, Design, development & evaluation of Indigenous computer controlled remote after loading system for the treatment of Ca Cx.

Guides Dr.V.Padmanabhan, Dr.M.K.Nair, Dr.R.R.K.Nair

4. Mr.K.A.Davis, Development of a quality assurance protocol, dose measurement and radiation safety evaluation in CT scanners.

Guides Dr.V.Padmanabhan & Dr.L.Godfray (MG University)

5. Mr.P.Raghu Kumar, Calibration, dosimetry and safety in brachytherapy in the treatment of malignant diseases (2000).

Guides Dr.V.Padmanabhan & Dr.L.Godfray (MG University)

#### Awards/Honours/Fellowship/Nominations/Training.

##### Dr.V.Padmanabhan

1. Examiner MD/DMRD (Radiodiagnosis) University of Kerala. Dept. of Radio diagnosis, Medical College on 8.6.2000.
2. National Advisory Committee Member XXI conference on Medical Physics KMIO, Bangalore 9-11, Nov 2000.
3. Member Board of studies in Radiation Physics, University of Calicut from 24.8.2000 for 3 years.
4. Examiner DMRT The Tamil Nadu Dr.MGR University Chennai Medical College on 10.4.2001.

5. Inspection of Caesium gammaatron & gammaatron R at Dept of radiotherapy, Medical College, Calicut.
6. Chaired a session in XXI AMPI conference, Bangalore 9-11, Nov.2000.
7. Member scientific programme committee International conference on Med.Phys. ICMP 2K 1, BARC, Mumbai 26-29 Nov 2001.

**Mr.C.A.Davis**

1. Board of studies member- M.Sc Medical Physics, University of Calicut.
2. Examiner - B.Sc MRT University of Calicut, MD Radiotherapy & DMRT -The Tamil Nadu Dr MGR University, Chennai.

**Dr.Raghu Ram.K.Nair:**

Teletherapy plans approval BARC Mumbai on 5-8 June 2000.

**Mr. T.S.Elias**

Awarded certificate of merit by the Hon. Union Minister for Health at RCC on 12.7.2000 for remote after loader system (QRI)

**Mr.P.Raghu kumar**

External examiner BSc, MRT, M.G.University, Kottayam.

**EPIDEMIOLOGY AND CLINICAL RESEARCH**

Dr. Cherian Varghese	Associate Professor of Epidemiology & Clinical Research
Dr. Aleyamma Mathew	Assistant Professor of Statistics & Epidemiology (on leave)
Ms. G Padmakumary Amma	Lecturer in Biostatistics

The division runs the Hospital Cancer Registry and the Population based cancer registry in Trivandrum and conducts epidemiological and clinical cancer research. This Division is the nodal point for planning, implementation and evaluation of cancer control programmes and provides

consultancy for various agencies. Teaching and training programmes are held regularly for undergraduate and postgraduate students. Medical and Paramedical sciences within and outside the campus are given support in research projects.

**Ongoing programmes and projects**

**Malabar Cancer Control Programme**

This project was inaugurated by the Honble Minister for Health & Family Welfare, Government of Kerala on 17 November, 2000 at Kannur. As part of this project cancer detection and prevention clinics have been set up in Kanhangad, Manathavady and augmented the Malabar Cancer Care Society Cytology Laboratory at Kannur. Therapeutic facilities were provided at the three District Hospitals in Kasargod, Kannur and Wayanad. Posters and pamphlets have been developed; as well as short films of cancer control have been prepared. Junior Public Health Nurses and Doctors have been trained in cancer control and a handbook on cancer control has been prepared. More than 3000 women have been screened and we have demonstrated that organised Pap smear based screening programmes are feasible in low resource settings. This programme will be integrated in to the existing health care services in the Districts, which will ensure continuity of services.

**Risk factors for common cancers.**

The Kerala Transport Development Finance Corporation has funded a project for identifying risk factors for cancer and hospital information computer network. Information from cancer patients and control subjects are being collected for studying the risk factors.

**OncoNET Kerala**

The collaborative project submitted by this Division, Division of Information Systems and the ER&DCI, Trivandrum has been funded by the Ministry of Information Technology has completed the first phase. The RCC now has its own website which also provides interactive services to the public for cancer detection and advice. Teleclinics are being established and the nodal centre at Kochi is being piloted. Telepathology services will be introduced in the second phase.

**Ongoing projects**

## **Molecular Epidemiology of Paediatric Leukaemia and Lymphoma in Kerala, India**

*(Collaborators: University of Leeds, UK)*

This study has systematically looked in to the immunophenotype of children with acute leukaemia and aims to undertake case-control investigations to address the aetiological factors.

### **Case-control studies**

Data on various exposures (dietary data, tobacco alcohol habits, reproductive factors and socio-economic variables) have been collected for Breast, Cervix and Oesophageal cancers and controls. Data management and analysis are in progress.

### **District Cancer Care Centre, Kozhencherry, Pathanamthitta**

This is the first of its kind in integrating cancer care in health services in India and has established itself as a viable option for health care delivery. Patients from the District Hospital are using the much needed laboratory services established as part of this programme.

### **Population-Based Cancer Registry, Trivandrum.**

This registry is providing reliable data on cancer incidence and mortality in the population of Trivandrum Corporation and adjoining three Community Development Blocks. The age specific incidence rates for males and females are plotted in Fig.1 and mortality rates in Fig.2. Fifty percent of cancers in men are amenable to primary prevention and in women 50% of cancers are amenable for control (Fig 3 & 4). The data for the years 1993-1997 has been sent to IARC (WHO) for the publication 'Cancer Incidence in Five Continents'. The Cancer Society of Finland has donated USD 7000 per year for five years (2001 to 2005) for this project.

### **Hospital Cancer Registry**

The cancer cases registered in 1998 at RCC were abstracted, coded and analyzed during the period under report. A change in the coding system to ICD-O2 has been the major change in the data presentation in 1998.

### **Cancer Pattern in RCC, Trivandrum in 1998**

Seven thousand three hundred and forty six (7346) cases were reported during the year 1998. The distribution of cancer cases with

respect to site, age and sex are given in Tables 1 & 2. The male: female ratio was 1.1: 1. The peak age frequency in males was observed in 7th decade and females in the 6th decade. The age distribution of males and females are shown in Fig. 5. 93.6% of cases had microscopic verification of diagnosis. In the 5116 previously untreated cases 12.2% were in the early stages. Among those who reported for treatment, 57% were treated with a curative intent. Analysis by type of treatment showed that 36.8% received radiation as the only form of treatment and 60.4% in combination with other forms of therapy.

### **Leading Cancers**

Lung was the commonest site of cancer among males and among females it was breast cancer. The system wise distribution of cancer cases is shown in Fig 6. The ten leading sites of cancer in men and women are shown in Table 3.

### **Childhood Cancers**

Childhood cancers (0-14 years) formed 305 (4.2%) of the total cases. The leading paediatric cancers were Leukaemia 118 (38.7%), Brain 39 (12.8%) and Lymphoma and Hodgkins' disease 32 (10.5%).

### **Awards/ Nomination/Fellowship/Visiting/ Appointments Etc.**

#### **Dr Cherian Varghese**

1. Awarded Ph.D in Medicine from the University of Tampere, Finland
2. Travel Scholarship EUROGIN, 2000. 5-9 April, Paris, 2000.
3. Travel Scholarship, Khon Khaen, Thailand, Nov 2000.
4. Invited faculty, XXIII All Kerala Conference on Obstetrics & Gynaecology, Feb. 2001, Trivandrum.
5. Hon. Medical Advisor, Karunya Vishranthi Bhavan Hospice, Kattela, Trivandrum.
6. Governing Body member of District Cancer Care Society, Pathanamthitta, Kollam and Kottayam.
7. Editorial Board, Asia Pacific Journal of Cancer Prevention.

#### **Dr. Aleyamma Mathew**

1. Awarded Post-doctoral Fellowship from the National Institute of Health, Maryland, U.S.A., 2000



2. Worked as a Post-doctoral visiting Scientist, at the Nutritional Epidemiology, Division of Cancer Epidemiology and Genetics, National Cancer Institute, April 2000-July 2001.
3. Received Prof. B G Prasad award for the best-published work related to Epidemiology, by the Indian Society for Medical Statistics, Indian Council of Medical Research, NewDelhi.
4. Advisory board member of the Journal of the Academy of clinical microbiologists.
5. Editorial board member of the Regional Cancer Centre House Magazine.



Peripheral cancer control programme under the auspices of UNFPA and RCC at Mananthavadi being inaugurated by Sri V.C. Kabear, Hon'ble Health Minister of Kerala.



A scene of the crowd mostly consisting of tribals waiting to be screened for cancer.

Table 1. Regional Cancer Centre - Trivandrum: Number of Cancer Cases 1998; Age by Site - Males

CD10SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total	%
C00 LIP	-	-	-	-	-	-	-	1	2	-	1	1	2	2	-	2	11	0.28
C01 BASE OF TONGUE	-	-	-	-	-	-	-	-	2	4	7	5	8	5	2	2	35	0.91
C02 TONGUE	-	-	-	-	-	1	6	9	11	24	35	33	35	19	13	13	199	5.15
C03 GUM	-	-	-	-	-	-	-	-	7	8	8	11	9	18	10	12	83	2.15
C04 FLOOR OF MOUTH	-	-	-	-	-	-	-	-	3	6	5	9	6	3	7	2	41	1.06
C05 PALATE	-	-	-	-	-	1	1	1	2	3	3	6	13	9	2	4	45	1.16
C06 OTHER MOUTH	-	-	-	-	-	-	1	7	12	27	38	25	38	33	25	18	224	5.8
C07 PAROTID GL.	-	-	-	-	1	1	1	-	2	1	-	1	1	2	1	2	13	0.34
C08 SALIVARY GL.	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	4	0.1
C09 TONSIL	-	1	-	-	-	-	-	2	3	4	2	3	9	5	1	2	32	0.83
C10 OROPHARYNX	-	-	-	-	-	-	-	1	3	8	16	11	8	9	7	5	68	1.76
C11 NASOPHARYNX	-	2	1	3	-	1	2	2	3	5	1	3	4	1	2	3	33	0.85
C12 PYRIFORM SINUS	-	-	-	1	-	-	-	3	1	5	8	13	11	7	9	5	63	1.63
C13 HYPOPHARYNX	-	-	1	-	-	-	1	1	6	8	6	7	13	6	9	6	64	1.66

CD10 SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+ Total	%	
C14 PHARYNX ETC.	-	-	-	-	1	-	1	-	-	1	4	1	4	3	2	2	19	0.48
C15 OESOPHAGUS	-	-	-	-	-	1	-	3	6	16	31	35	34	34	34	20	214	5.54
C16 STOMACH	-	-	-	-	-	4	4	6	10	21	21	13	23	21	18	8	140	3.66
C17 SMALL INTES.	-	-	-	-	-	1	-	-	-	-	2	2	1	1	1	-	8	0.21
C18 COLON	-	-	-	1	2	2	2	4	6	8	13	7	4	7	1	2	59	1.53
C19 RECTOSIGMOID	-	-	-	-	-	-	-	1	-	-	1	1	-	2	2	-	7	0.18
C20 RECTUM	-	-	-	-	-	2	3	6	7	6	8	9	10	7	10	7	75	1.94
C21 ANUS & ANAL CA	-	-	-	-	-	-	-	2	-	-	-	-	1	2	1	-	6	0.16
C22 LIVER	1	-	1	-	1	7	7	7	12	4	11	10	10	10	4	5	90	2.33
C24 OTH. BILIARY	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	0.03
C25 PANCREAS	-	-	-	1	-	1	-	1	2	3	3	2	3	6	3	1	26	0.67
C26 OTHER DIG SYS	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	0.03
C30 NASAL CAV.	-	-	1	-	-	-	-	-	2	2	2	-	2	2	-	1	12	0.31
C31 ACCESSORY SIN	-	-	-	-	-	1	-	1	1	4	2	3	5	2	-	2	21	0.54
C32 LARYNX	-	-	-	-	-	1	-	4	10	11	24	27	36	37	25	10	185	4.73

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CD10 SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+ Total	%	
C34 LUNG	-	-	-	-	1	-	4	15	21	56	77	87	101	99	61	40	562	14.54
C37 THYMUS	-	-	-	-	1	-	-	2	1	1	1	-	1	1	-	-	8	0.21
C38 HEART, MED. & PL	-	-	-	-	-	2	1	3	2	-	2	1	1	-	1	-	13	0.34
C39 OTHER RESPI.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	0.03
C40 BONE OF LIMBS	1	1	7	15	7	8	2	-	-	-	2	-	-	-	-	-	41	1.06
C41 OTHER BONE	-	-	1	2	2	1	-	-	-	1	-	1	-	-	-	-	8	0.21
C43 SKIN, MELA	-	-	-	-	1	1	-	-	1	2	1	-	2	3	-	2	13	0.34
C44 SKIN, OTHER	-	1	-	1	-	2	2	6	3	10	9	5	8	4	4	11	67	1.73
C47 PERIPH. NERVS	1	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	4	0.1
C48 RETROPERIT.	2	-	-	-	1	1	1	-	1	1	1	-	1	2	-	-	11	0.28
C49 CONN. TISS.	-	2	4	1	3	4	3	4	4	4	5	8	2	3	5	1	53	1.37
C50 BREAST	-	-	-	-	-	-	-	-	3	2	-	-	3	1	2	2	13	0.34
C60 PENIS	-	-	-	-	-	2	2	5	2	1	3	8	5	4	3	2	39	1.01
C61 PROSTATE	-	-	-	-	-	-	-	-	-	-	5	5	8	15	20	13	66	1.71
C62 TESTIS	2	-	-	2	3	5	10	3	3	3	1	1	-	-	-	1	34	0.88

55



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CD10 SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+ Total	%	
C63 OTH.MALE.GEN.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	0.03	
C64 KIDNEY	5	1	-	-	-	-	-	1	3	2	3	2	2	3	4	4	30	0.73
C65 RENAL PELVIS	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2	0.05
C66 URETER	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	0.03
C67 URI.BLADDER	-	1	-	-	-	-	1	2	5	3	4	8	7	7	5	6	49	1.27
C68 EYE	5	-	-	1	-	-	-	-	1	1	-	-	-	-	2	-	11	0.28
C70 MENINGES	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2	0.05
C71 BRAIN	2	5	8	7	3	11	12	11	13	15	6	9	3	3	3	-	111	2.87
C72 NERVOUSSY.	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	3	0.08
C73 THYROID GL.	-	1	1	3	9	7	9	13	9	9	8	9	7	7	7	4	103	2.63
C74 ADRENAL GL.	5	1	1	-	-	-	-	-	-	-	1	1	-	-	-	-	9	0.23
C75 OTH.ENDO.GL.	-	-	-	-	-	-	-	1	-	1	-	-	1	-	-	-	3	0.08
C76 ILL DEF. SIT.	2	-	-	-	-	-	-	-	1	-	-	1	2	1	-	-	7	0.18
C77 SEC.LYMPH.N	-	-	-	-	1	3	1	3	7	3	19	22	15	18	15	9	122	3.16
C78 SEC.RES. ETC	-	-	-	-	-	1	1	2	8	14	12	13	13	13	16	10	163	2.66

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CD10 SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+ Total	%	
C79 SEC.OTHER	2	-	-	-	-	-	-	1	3	4	6	12	16	5	6	3	58	1.5
C80 PRIM.UNK.	1	-	-	-	1	-	1	-	3	3	7	4	4	2	1	-	27	0.7
C81 HODGKINS.D.	2	4	5	5	3	4	3	1	-	5	2	2	1	1	-	2	40	1.03
C82 FOLLIC.NHL	-	-	-	1	-	1	2	2	1	8	2	5	2	2	1	-	27	0.7
C83 DIFFUSE NHL	2	1	1	4	1	9	4	8	10	13	9	4	7	11	4	6	94	2.43
C84 T-CELL LYMPHO	-	-	-	1	-	1	2	2	2	5	2	3	2	-	2	1	23	0.6
C85 OTHER NHL	1	3	2	1	1	1	3	4	2	-	6	4	1	3	4	2	38	0.98
C90 MULTIPLE MYELOMA	-	-	-	-	-	-	1	1	3	8	6	5	9	10	6	3	52	1.35
C91 LEUK LYMPHA.	32	17	19	17	6	10	3	2	4	7	3	1	3	1	3	3	130	3.36
C92 LEUK. MYELO.	2	2	5	9	10	10	12	11	8	12	2	3	2	1	1	4	94	2.43
C93 LEUK. MONOC.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	0.03
C95 LEUK. UNS.	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	2	0.05
C96 OTH. LEUK & LY	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.03
Total	71	43	58	79	59	107	110	167	238	379	459	466	525	474	367	263	3665	

Table 2. Regional Cancer Centre - Trivandrum: Number of Cancer Cases 1998; Age by Site - Females

ICD10	SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total%
C00	LIP	-	-	-	-	-	-	-	1	-	3	3	3	2	-	2	14	0.4
C01	BASE OF TONGUE	-	-	-	-	-	-	-	1	-	1	1	-	-	1	-	4	0.11
C02	TONGUE	-	-	-	1	3	1	4	7	9	10	26	14	23	11	15	124	3.58
C03	GLIM	-	-	-	-	-	-	-	1	3	4	8	8	10	10	10	54	1.55
C04	FLOOR OF MOUT	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	4	0.11
C05	PALATE	-	-	-	-	1	1	1	-	1	2	-	2	1	-	1	10	0.29
C06	OTHER MOUTH	-	-	-	-	1	2	5	4	13	12	18	22	27	18	25	147	4.22
C07	PAROTID GL.	-	1	-	-	-	-	1	-	1	2	2	-	2	1	-	10	0.29
C08	SALIVARY GL.	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	2	0.06
C09	TONSIL	-	-	-	-	-	1	-	1	1	-	-	-	1	-	-	4	0.11
C10	OROPHARYNX	-	-	-	-	-	-	-	-	-	1	-	2	-	-	1	4	0.11
C11	NASOPHARYNX	-	-	-	1	2	-	-	-	1	1	-	-	1	1	1	8	0.23
C12	PYRIFORM SINU	-	-	-	-	-	-	-	-	1	-	1	1	-	2	1	6	0.17
C13	HYPOPHARYNX	-	-	-	-	1	-	2	1	3	2	2	-	4	-	2	17	0.49

85

ICD10	SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total%
C15	ESOPHAGUS	-	-	-	-	2	3	-	6	3	4	12	9	11	9	7	66	1.9
C16	STOMACH	-	-	1	2	4	1	4	4	1	4	6	6	5	4	1	43	1.24
C17	SMALL INTES.	-	-	-	-	1	-	-	-	-	-	-	2	-	-	-	3	0.09
C18	COLON	-	-	-	1	1	2	2	4	5	3	6	5	4	4	1	38	1.09
C19	RECTOSIGMOID	-	-	-	-	1	-	-	-	-	-	1	1	-	-	-	3	0.09
C20	RECTUM	-	-	-	2	2	2	4	2	2	2	4	3	2	4	2	31	0.89
C21	ANUS & ANAL C	-	-	-	-	-	1	-	-	-	-	1	4	-	-	1	7	0.2
C22	LIVER	-	-	-	-	-	2	1	3	3	2	3	5	5	1	-	25	0.72
C23	GALL BLADD.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	0.03
C24	OTH. BILIARY	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	2	0.06
C25	PANCREAS	-	-	-	-	1	1	1	2	3	4	2	3	3	-	3	23	0.66
C30	NASAL CAV.	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	2	0.06
C31	ACCESSORY SIN	-	-	-	-	-	-	-	1	1	1	1	-	2	1	-	7	0.2
C32	LARYNX	-	-	-	-	-	-	2	1	-	2	1	2	4	-	1	13	0.37
C34	LUNG	-	-	-	-	1	1	3	7	5	13	12	13	12	6	2	75	2.15

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ICD10	SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total	%
C37	THYMUS	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	2	0.06
C38	HEART,MED.&PL	-	-	-	-	-	-	-	1	1	-	1	4	-	-	-	-	7	0.2
C40	BONE OF LIMBS	-	3	7	8	2	1	-	1	1	-	-	-	-	-	-	-	23	0.66
C41	OTHER BONE	3	1	-	1	-	1	-	1	-	1	-	-	1	-	-	-	9	0.26
C43	SKIN,MELA	-	-	-	-	1	1	-	2	-	3	1	-	7	1	4	1	21	0.6
C44	SKIN,OTHER	1	2	-	-	-	-	2	1	-	2	1	5	1	1	-	6	22	0.63
C47	PERIPH.NERVS	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	0.03
C48	RETROPERIT.	-	-	-	1	-	-	1	1	-	1	-	-	1	1	-	-	6	0.17
C49	CONN.TISS.	4	3	-	3	5	1	2	1	2	3	4	1	3	3	-	-	37	1.06
C50	BREAST	-	-	-	2	6	19	74	115	147	168	138	94	79	44	34	25	945	27.15
C51	VULVA	1	-	1	-	-	-	-	-	1	-	-	1	2	2	3	11	0.32	
C52	VAGINA	-	-	-	-	-	-	2	-	2	-	1	3	1	-	2	11	0.32	
C53	CERVIX	-	-	-	-	-	2	9	31	45	79	75	77	79	52	39	27	515	14.79
C54	BODY UTERUS	1	-	-	-	-	-	-	-	3	6	6	15	13	4	8	-	56	1.61
C55	UTERUS NOS.	-	-	-	-	-	-	1	1	1	-	1	1	-	-	-	-	5	0.14

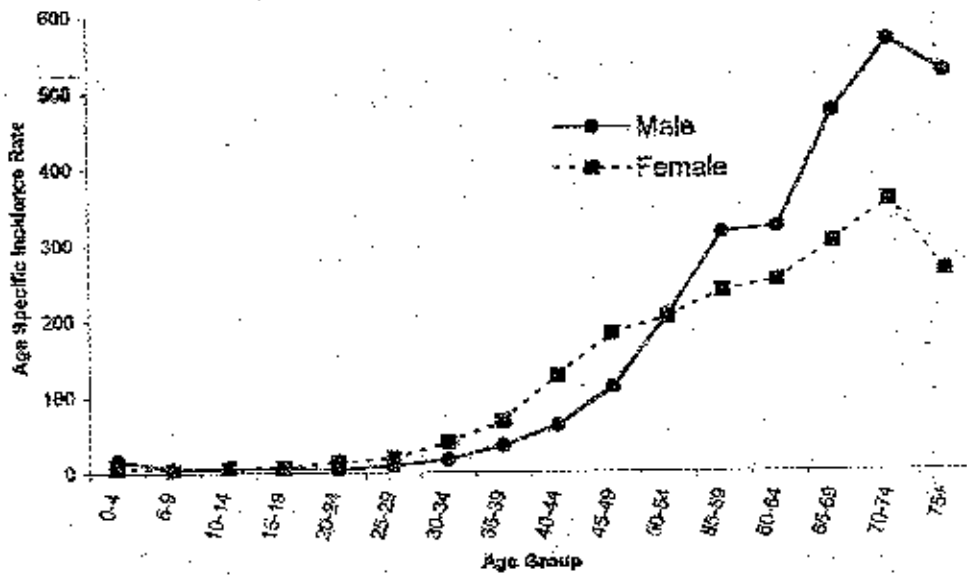
ICD10	SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total	%
C56	OVARY	-	3	4	9	16	18	11	17	21	36	34	24	19	16	9	11	248	7.12
C57	OTH.FEM.GEN.O	-	-	-	-	-	1	-	-	-	-	-	-	1	1	-	-	3	0.09
C58	PLACENTA	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	3	0.09
C64	KIDNEY	3	-	-	-	1	-	-	-	1	-	1	-	1	-	-	-	7	0.2
C67	URI,BLADDER	1	-	-	-	-	-	-	-	1	-	-	2	6	-	-	2	12	0.34
C69	EYE	2	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	3	0.08
C71	BRAIN	6	6	12	5	5	3	6	4	7	2	7	1	3	1	1	-	69	1.98
C72	NERVOUS SY.	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	0.03
C73	THYROID GL.	-	-	3	15	17	43	46	33	33	37	17	7	14	7	5	6	283	8.13
C74	ADRENAL GL	5	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	7	0.2
C75	OTH.ENDO.GL.	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2	0.06
C76	ILL DEF. SIT.	4	-	-	-	-	1	-	-	-	-	-	-	1	1	1	-	8	0.23
C77	SEC.LYMPH.N	-	-	-	-	3	1	2	2	3	4	3	4	3	5	3	1	35	1.01
C78	SEC.RES.ETC	-	-	-	1	-	-	1	2	2	2	8	12	8	4	7	1	48	1.38
C79	SEC.OTHER	-	-	1	-	-	1	1	-	-	4	2	2	2	3	1	2	19	0.55

ICD10	SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+ Total	Total%
C80	PRIM. UNK.				1	2		2	1	2	1	3	1	4	1		18	0.52
C81	HODGKINS.D.	2	3	2	3		3	2	2	1		1					19	0.55
C82	FOLLICULAR NHL				1	1		1	1	1		2			1	2	10	0.29
C83	DIFFUSE NHL		4	1	2	1		2	1	5	11	7	3	4	6	1	49	1.41
C84	T-CELL LYMPHO			1	1		1			1		1		1		2	8	0.23
C85	OTHER NHL				1	4	1	1	3	4	1	2	1	2		1	22	0.63
C90	MULTI.MYELOMA							2	4	8	4	3	9	7	5	3	46	1.32
C91	LEUK.LYMPHA.	8	13	9	2	4	3		2		4	3	3	2			62	1.78
C92	LEUK.MYELO.	5	3	2	4	7	9	9	9	6	1	4	5	3	3		77	2.21
C93	LEUK.MONOC.											1	1				2	0.06
C95	LEUK.URIS.																2	0.06
Total		46	39	48	64	82	139	192	263	338	438	385	388	377	292	208	172	3481

Table 3. Regional cancer Centre, Trivandrum: Ten Leading Sites - 1998

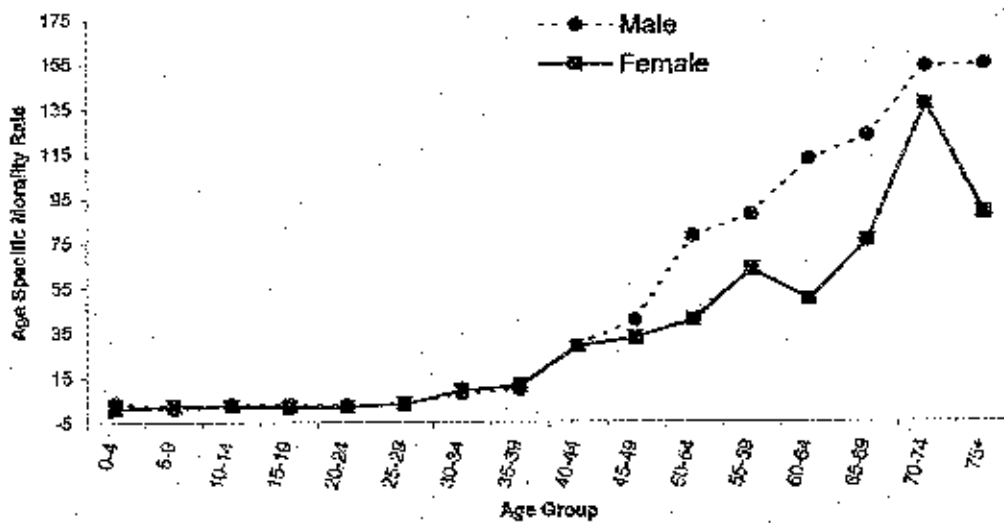
		Male		Female			
ICD-10	SITE	No	%	ICD-10	SITE	No	%
C00 - C06	Oral Cavity	838	16.5	C50	Breast	946	27.2
C94	Lung	562	14.5	C53	Cervix	515	14.8
C09,10,12,13,14	Pharynx	248	6.4	C00 - C06	Oral Cavity	357	10.9
C91 - C96	Leukaemia	228	5.9	C73	Thyroid	283	8.1
C81 - C85	Lymphoma, HD	222	5.7	C56	Ovary	248	7.1
C15	Oesophagus	214	5.5	C91 - C98	Leukaemia	143	4.1
C32	Larynx	185	4.8	C81 - C85	Lymphoma, HD	108	3.1
C16	Stomach	148	3.9	C34	Lung	75	2.2
C71	Brain	111	2.9	C71	Brain	69	2
C73	Thyroid	103	2.7	C15	Oesophagus	66	1.9
Total		2658	68.8	Total		2809	80.8
C00 - C98	All Sites	3885		C00 - C98	All Sites	3481	

**Fig 1. Age Specific Incidence Rate (1996 - 1997)  
All Cancers (ICD9 - 140 - 208)**



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**Fig. 2. Age Specific Mortality Rates (1991-1997)  
All Cancers (ICD9 - 140 - 208)**



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Fig. 3. Trivandrum Cancer Registry (1996-97)  
Cancer Amenable to Control - Male (TRC)

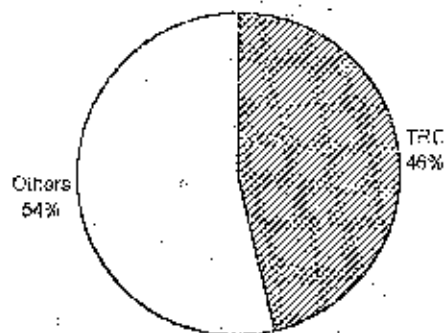


Fig. 4. Trivandrum Cancer Registry (1996-97)  
Cancer Amenable to Control - Female

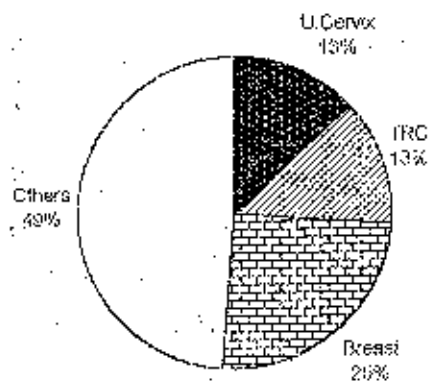


Fig 5 Regional cancer Centre, Trivandrum- Cancer cases by age-1998  
(Male - 3855, Median age : Male - 56.2, Female - 50.6)

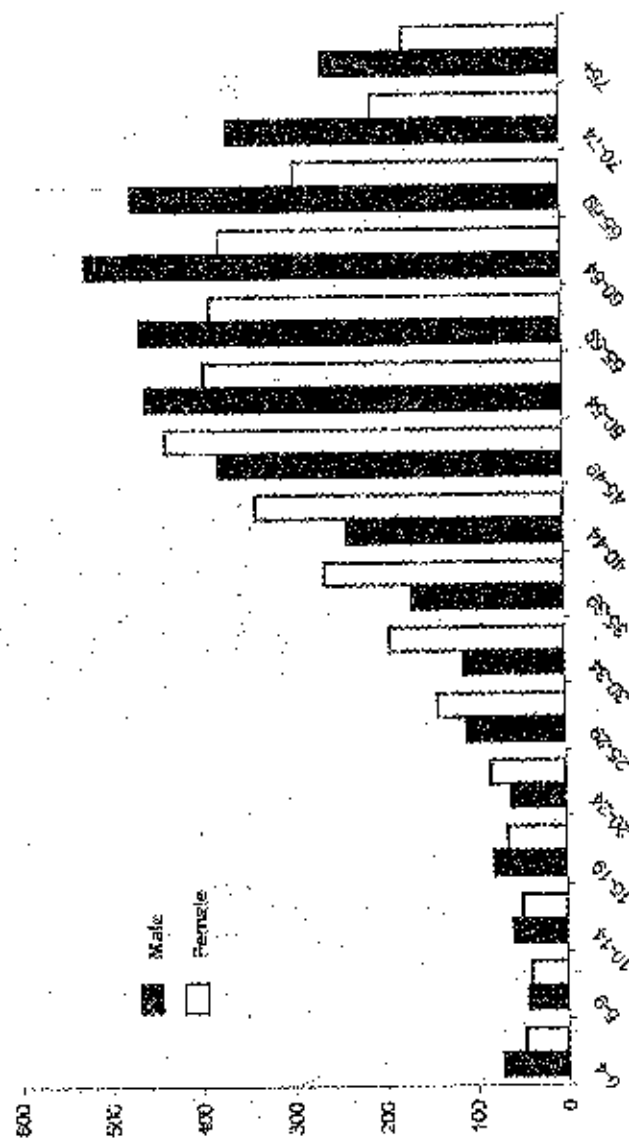
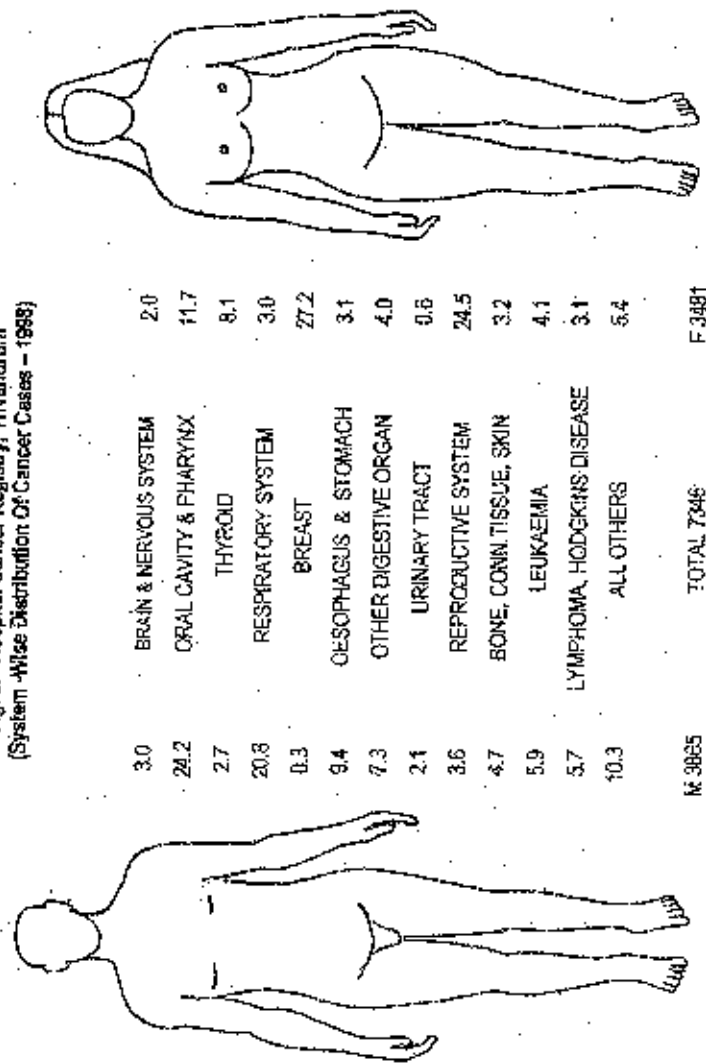




Fig. 6. Hospital Cancer Registry, Trivandrum  
(System-Wise Distribution Of Cancer Cases - 1988)



## NATURAL BACKGROUND RADIATION CANCER REGISTRY, KARUNAGAPPALLY, KOLLAM

Principal Investigator	Dr. M. Krishnan Nair.
Co-Principal Investigator	Mr. P. Garigadharan.
Co-Investigators	Dr. V. M. Pradeep, Dr. Cherian Varghese, Dr. Flavi Ankathil, Dr. P. Jayalekshmi
Co-Investigator & Project Co-ordinator	Dr. Raghu Ram K. Nair
Medical Panel	Dr. B. Rajan, Dr. P.G. Jayaprakash, Dr. S. Pararneswaran, Dr. Paul Sebastian, Dr. K. Ramdas, Dr. Rachel C. Koshy, Dr. K. Jayasree.
Field Office	Puthenthura, Neendakara, Karunagappally Taluk.
Officer-in-charge	Dr. P. Jayalekshmi (Sociologist).
Cytotechnologist	Mr. K.S. Mani.
Radiation Dosimetry Supervisor	Dr. Raghu Ram K. Nair

The studies on Natural Background Radiation are continuing. A detailed analytical report of the work and results obtained during 1990-1998 was prepared and submitted to BRINS, Department of Atomic Energy for comments and discussion. The work of cancer case finding is being continued and registry data is getting accumulated. The sources covered for this are the hospitals in Karunagappally taluk, the clinics of NBRR, the major hospitals in Kollam Town, the Regional Cancer Centre, Trivandrum, the Medical College Hospital, Trivandrum and the deaths registered in the Vital Statistics Division of Panchayats in Karunagappally

taluk. Additionally the pathology records of Doctors Diagnostic Centre, Trivandrum are also scrutinized. As mentioned in the previous years report, there has been no evidence yet that the overall cancer incidence is influenced by radiation exposure levels as obtained in Karunagappally.

The ten leading sites of cancer seen during 1993-1997 are given in figure 1. The high incidence rate of cancers of lung in males, thyroid cancer in females are highlighted and further analysis and studies are ongoing. The Crude and Age Adjusted Incidence Rates and Cancer Mortality during 1993-1997 is given in Table 1.

Fig.1 Ten leading sites of cancer

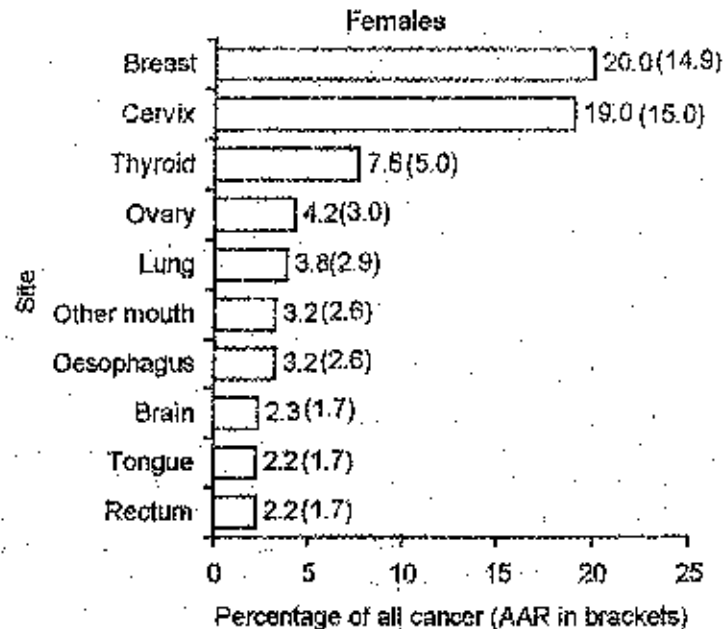
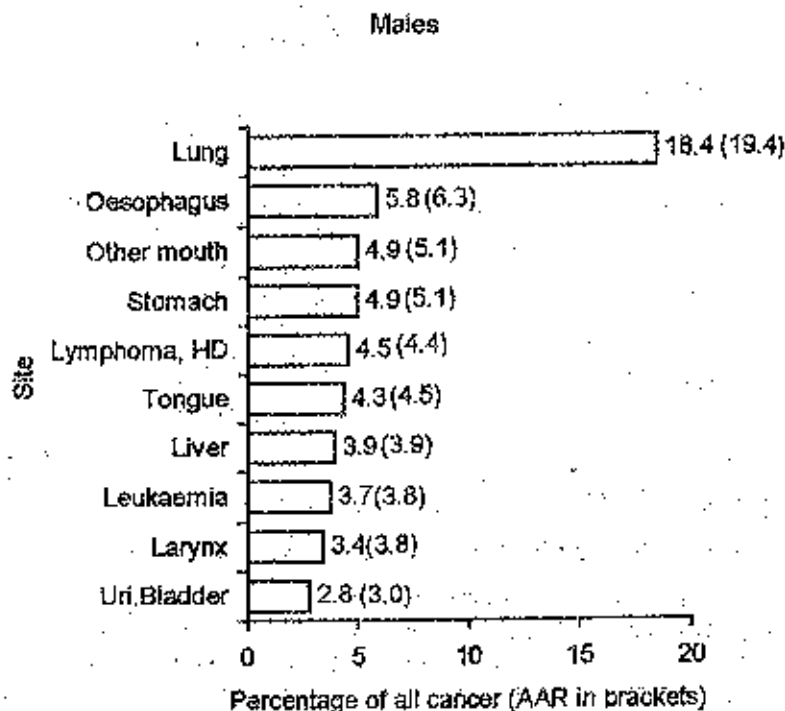


Table 1: Crude and Age Adjusted incidence Rates and Cancer Mortality during 1993-1997

	Male	Female
Crude Rate/100,000	89.5	72.6
Age Adjusted Rate/100,000	102.7	75.5
Death Rate from Cancer/100,000	48.4	30.7

In the NBRR clinics 1,750 patients were examined including examination of Pap smear, FNAC Specimens, Sputum Cytology etc during the year under-report.

A total of 9 clinics were conducted for follow-up examination and 486 old treated cancer patients were re-examined by the Doctors from RCC. In separate clinics the patients who had Cervical Dysplasia and Oral Leukoplakia and Submucous Fibrosis are followed-up.

It was observed that even though the death registration is more or less complete; the cause of death recording is inadequate. Hence all deaths reported from 1998 January onwards are being followed back and relevant information collected on all deaths by a 'Verbal Autopsy' as well as scrutiny of all available medical records. A total of 4,300 deaths were recorded during the two-year period 1998 and 1999 in the Vital Statistics Division of Panchayats. Cancer case finding has been intensely pursued with house-to-house visits also.

During the year a migration survey was completed in one panchayat (K.S.Puram), which included revisits to 8,117 households. For estimating the exact measure of radiation dose received by an individual, his/her area of activities had to be identified. For this, a house occupancy survey of 7,639 people of all ages was completed this year. This was a random sample covering all panchayats. It is now possible to estimate the dose to which a person is exposed, recognizing the in house radiation, house occupancy time, outside radiation and time exposed outside house.

During the year the panchayats in Karunagappally taluk contributed a total of Rs. 5.7 lakhs from the Peoples Plan Fund for continuing the studies and for Cancer Patient Services.

During the year 9 screening camps and 4 cancer awareness classes were conducted in different panchayat areas.

The Chavara Block Panchayat with concurrence from DHS & District Medical Office, Kollam has handed over to RCC-NBRR the old Paediatric Ward of Govt. Hospital Neendakara (Norwegian Foundation Hospital) to start a Cancer Palliative Care Ward, Cancer Pain Relief Clinic and a Cancer Patient Rehabilitation Centre.

The Health Research Foundation, Japan is supporting for a Cohort analysis of radiation-exposed population. This activity is to

undertake a cohort analysis of the exposed population. The objective is to examine the risk for developing cancer when exposed to natural radiation of varying dose rates and accumulated dose and other confounding and competing risk factors. The population residing in Chavara, Neendakara, Alappad and Panmana is considered as Radiation Cohort and the population in Oachira and Thevalakkara is the control cohort. These populations are intensively followed-up for recording migration, health effects, deaths and cancer occurrence.

## BASIC RESEARCH

Dr. Prabha Balaram	-	Additional Professor
Dr. Ravindran Ankathil	-	Associate Professor
Dr. S. Kannan	-	Assistant Professor
Dr. P. Remani	-	Assistant Professor
Dr. Thomas Abraham	-	Scientific Officer

The division continues its endeavour for excellence in investigating almost every field of cancer biology. The investigators use varied disciplines such as molecular biology, immunology, cytogenetics and lectin biology.

The major areas pursued by the department are 1) the fundamental aspects of cancer molecular biology centred around cell cycle regulation, apoptotic machinery, radiosensitivity, metastatic mechanism, viral pathogenesis etc.; 2) establishment of a familial cancer registry and evaluation of chromosomal abnormalities predisposing Down Syndrome patients to the development of malignancy are also being cytogenetically evaluated; 3) prediction of treatment response using molecular biology and cytogenetic approaches; 4) study of the pathogenesis and molecular biology of Gestational Trophoblastic Disease and 5) identification of novel and superior pathologic markers using isolation and purification of new lectins from indigenous plant resources of Kerala.

### Molecular biology of cancers

The study of oral cancer is a prime domain of research interest

of the division. The treatment response and survival in oral cancer patients vary widely from one patient to another. In order to assess the biological behavior of the tumor, the expression pattern of a set of proteins involved in the crucial steps of cell cycle progression in oral carcinoma was studied. The cell cycle regulators such as p53, CDK4, CDK6, CyclinD1, p21, p16 and PCNA were immunohistochemically analyzed in the pretreatment biopsies of 405 oral cancer patients followed up to 36 months. In addition to this, expressions of angiogenic factor VEGF and anti-apoptotic protein bcl-2 and apoptotic index by TUNEL method were also studied in these tissues. The results show 1) alteration in cyclin D1 with a prognostic significance; 2) over expression of pRb to be related to poor prognosis; 3) p53 positivity to Pab240 clone antibody to have significant association with final treatment response 4) downregulation of cyclin dependent kinase inhibitor p16, with lesions with better prognosis for p16+ lesions. p53 (pab240), was the lone clinico-biological variable that was related to disease recurrence in oral carcinoma. The use of these markers as predictive markers and the molecular mechanism and mode of alterations in these genes are being studied.

It has been found that 55-60% of oral cancer patients receiving similar radiotherapy treatments exhibit radioresistance. Studies have been planned to understand molecular basis of radioresponse in oral cancer patients. The study broadly aims at estimating the inherent DNA damage repair capacity of the patients undergoing radiotherapy.

The investigation on breast cancer has focused primarily on the metastatic mechanisms and the genetic susceptibility of the disease. Various regulatory molecules of the metastatic cascade is being explored and efforts are on to evaluate and demarcate the mechanisms of nodal and distant metastasis. The expression profile of adhesion proteins such as cadherins, CD 44 and its variants was studied. The study disclosed that cadherins are important in nodal invasion and hence can be used as predictive markers of nodal metastasis in breast cancer. A strong positive correlation between E-cadherin and P-cadherin, which has hitherto has not been reported was observed suggesting a common regulatory pathway for the cadherins that might get activated upon initiation of nodal metastasis.

Gestational trophoblastic disease (GTD) is a manifestation of an aberrant fertilization that leads to a proliferative process and potentially to an invasive neoplasm. It needs special attention, as the hospital

incidence in the State of Kerala is as high as 12/1000 deliveries. Cell adhesion has an essential role in regulating proliferation and loss of adhesion requirement is a classic feature of invasion. The expression of different adhesion molecules CD44, CD44V8, E-Cadherin, P-Cadherin, ICAM, VCAM etc. in GTD using immunohistochemical and molecular has been used to differentiate spontaneously regressing and slow regressing types of GTD. The results obtained so far suggest the expression of the RB protein, EGFR, nm23 H1, Ki-67, cellular atypia and the serum beta HCG levels at 4 weeks of evacuation as useful indicators of the invasive nature of the disease and cellular atypia and the serum beta HCG levels at 4 weeks of evacuation as useful indicators of persistence of the disease. Initial validation studies carried out in SAT Hospital, Trivandrum supports these findings.

Tumour is the ultimate result of the imbalance between the proliferative and apoptotic rates of cells. Results in a small number of samples evaluating the apoptotic rates using morphological criteria, TUNEL assay, ladder formation and caspase 3 expression in show no increased rate of apoptosis in these lesions when compared to normal gestational age matched placentae. No increase in mitotic rate was also noticed in these tumours suggesting that a defect in apoptosis could lead to the accumulation of cells in GTD rather than hyperproliferation.

EGF and TGF alpha play important roles in the growth and differentiation of many types of cells. In normal placenta, which mimics malignant cells in many respects, a phasic expression of EGF and EGFR has been observed. The results are suggestive of action of these growth factors in an autocrine fashion in early implantation and a paracrine fashion at later stages. Our observations also show this phasic pattern to be lost in molar placentae showing an overexpression through out gestation. The results also suggest that the TGF alpha - EGFR pathway is active in normal placenta while both the TGF alpha-EGFR and EGF-EGFR pathways are active in the molar placenta probably resulting in a hyperproliferative activity throughout gestation. These observations are being reported for the first time.

Incidence of nasopharyngeal carcinoma (NPC) is geographically isolated, with a high incidence in South East Asia. Of late, we observed an increase in the incidence of NPC in Kerala has been observed, especially in rural areas. Our study has also unveiled an association between HPV infection and NPC pathogenesis. This study further aims

to understand the etiology of the disease and to assess the role of various oncogenes and tumor suppressor genes in the disease progression. Another expected outcome is the identification of high-risk group by assessing the genetic susceptibility of the individuals.

### **Immunology of cancers**

Studies on anti-tumor immune response mechanisms are critical in aiding the design of new therapeutics. Hence this field deserves as much attention as any other area of tumor biology. Preliminary work done by our group has shown T-cell dysfunction and a defect in T-cell mediated signal transduction in patients with cancer of uterine cervix and oral cavity. The work is in progress in order to elucidate the role of T-cell mediated signal transduction in the immune impairment in cancer patients and hence to evaluate the effectiveness of interleukin therapy to rectify the immune impairment in these patients.

### **Cytogenetic aspects of cancer**

A Familial Cancer Registry has been set up at RCC. Nearly 2000 cancer families have been identified so far. Initiated a Familial Cancer Registry with the following aims: (1) to investigate the incidence of familial cancers at the Regional Cancer Centre, Trivandrum, through pedigree analysis, and (2) to compile the pedigrees and estimate the relative cancer risk of the family members.

In these familial breast and/or ovarian cancer patients and their first degree relatives, our specific interest is to determine (1) the constitutional chromosome abnormalities (2) the chromosomal fragile sites and their relationship with chromosome breakpoints (3) the mutagen induced chromosome sensitivity or resistance with regard to chromosome breakage and (4) Germline mutation spectra of the breast cancer susceptibility gene BRCA1. For investigating the constitutional chromosome abnormalities, chromosomal fragile sites and mutagen induced chromosome sensitivity, we included 36 familial and 36 sporadic breast cancer patients, 65 first/second degree relatives and 40 controls. G-banded karyotype analysis of all the study subjects showed a normal karyotype pattern. But with regard to mutagen induced chromosome sensitivity, there was significant difference in the study subjects. Mutagen induced chromatid break/cell (b/c) values in familial and sporadic breast cancer patients were significantly higher than the b/c values observed in unaffected relatives and controls. Comparative analysis of Aphidicolin

induced chromosomal fragile site frequencies indicate that the incidence of aphidicolin induced fragile site expression, in breast cancer patients including both sporadic and familial cases, do not differ significantly from unaffected individuals and controls.

To explore the contribution of BRCA1 mutations to hereditary breast cancer among Indian women, we examined the coding sequence of BRCA1 in 14 breast cancer patients with a positive family history of breast and/or ovarian cancer. Exon 11 of BRCA1 being too big, was divided into 13 regions. Mutation analysis of BRCA1 using Conformation Sensitive Gel Electrophoresis (CSGE) showed 3 patients belonging to 3 different families with abnormal CSGE profiles. These three mutations were located in exon 2, exon 7, and exon 11.1. Further confirmation and characterisation was done by cycle sequencing. We were able to identify the mutations in all the 3 samples identified. The exon 7 in one patient showed a missense mutation (G-A), which resulted in the conversion of amino acid glutamic acid to lysine at codon 116. The exon 11 in another patient showed one base pair deletion (del A) at position 1027, which resulted in the formation of a termination codon at position 313. These two are novel mutations which have not been reported anywhere else in the world. The exon 2 in another patient showed 2 base pair deletions (del AG) at position 185, which resulted in the formation of a termination codon at position 39. We are continuing the study with more number of families, to get more insight into the BRCA1 contribution to Indian hereditary breast/ovarian cancer families.

Down Syndrome (DS) is characterized by trisomy and other abnormalities of chromosome 21 and has a predisposition to develop leukemia and other malignancies. This study aims to (1) to assess the different types and incidence of malignancies observed in Down Syndrome patients (2) to determine cytogenetically the different types and incidence of constitutional chromosome abnormalities in Down Syndrome patients with and without malignancies in Kerala State (3) to determine the genomic instability in Down Syndrome patients with and without malignancies, employing mutagen induced chromosome sensitivity assay (4) to evaluate whether mutagen sensitivity assay could be utilized to identify the DS patients who are at a high risk to develop malignancies. Forty-eight DS patients and 8 DS patients with malignancies and 20 normal controls were subjected to cytogenetic evaluation of genomic instability. The normal controls showed hyposensitivity to bleomycin as a result of efficient DNA repair capability



inherent in them. Compared to controls, all the DS patients showed increased sensitivity to bleomycin. Mutagen sensitivity was, however, more pronounced in DS patients with malignancies showing significantly increased mean b/c values. Quantitation of CML cells based on Ph<sup>+</sup> chromosome positivity is an important issue to evaluate the response of IFN-alpha therapy. This study aims to monitor individual response of IFN-alpha therapy in CML patients and to evaluate the efficacy of treatment regimens.

### Potential of Lectins in cancer management

Seeds from 37 plants were screened for lectin activity during the reporting year. Two lectins isolated and purified from *Artocarpus hirsuta* and *Trichosanthus anguina* showed high haemagglutinating activity. The biological properties of these two lectins are being studied. A study was undertaken with the aim of investigating the binding properties of plant lectins to different types of leukemic cells to see potential of these lectins in typing of leukemias. Bone marrow and peripheral blood smears from 73 leukemia patients were used for the study. Using lectins isolated from *Artocarpus integrifolia* (JFL) and *Artocarpus hirsuta* (AHA), normal haematopoietic cells (neutrophilic series from the myelocyte stage onwards) exhibited intense and consistent positivity of the cytoplasm and cytoplasmic membrane. Eosinophils stained weakly and their precursors showed a higher intensity of staining, while basophils and their precursors stained variably. Myeloblasts and promyelocytes exhibited moderate binding. Megakaryocytes and normoblasts exhibited weak binding. Lymphocytes and monocytes were negative. Acute myeloid leukemia M1, M2, M3, M4 and M5 subtypes showed mean percentage positivity 13.4, 44.32, 95.31, 68.3 and 7.81 respectively. In chronic myeloid leukemia the percentage positivity was 78.32. In acute lymphocytic leukemia and chronic lymphocytic leukemia JFL and AHA exhibited negative staining to all the lymphoblasts.

### Academic Credits:

#### Prabha Balaram

**Invited participant:** Education in Kerala's Development - Towards a New Agenda ; State Level Workshop Series and National Conference, Kochi, November 5, 2000 and Thiruvananthapuram December 27 and 28th, 2000.

Referee for ICMR, CSIR, DST and STED research Projects and Publications

### Awards /Honours:

- 1) Biographical profile included in "2000 Outstanding Scientists of the 20th Century"
- 2) Selected for "The Twentieth Century Award for Achievement by International Biographical Centre, Cambridge, UK.

Executive Committee member :- Indian society for Radiation Biology  
Member :- Governing Body Amala Cancer Centre, Trichur.

### Research Supervision

1. Genomic instability in breast cancer : Ongoing doctoral programme  
Ms. Priya Srinivas
2. Molecular biology of Gestational Trophoblastic disease : Ongoing doctoral Programme  
Ms. Swapna Enoose
3. Molecular alterations in oral cancer with special emphasis on oncogenes and tumour suppressor genes : Ongoing doctoral programme  
Ms. Prishla Varghese
4. Adhesion protein as metastatic markers : Ongoing doctoral programme  
Ms Maya Madhavan
5. T cell signal transduction in correlation with immune response and response to therapy in patients with cancer of the uterine cervix. : Ongoing doctoral programme  
Ms. Smriti Krishna
6. Molecular alterations in relation to response in squamous cell carcinoma. : Ongoing doctoral Programme  
Ms. Salini V.
7. Analysis of molecular alterations of epidermal growth factor receptor in GTD : Ongoing doctoral Programme  
Ms. Jemima Jacob

### MD/MS Thesis supervision

1. p53 alterations in relation to habits in oral cancer : Ongoing Programme  
Dr. Sanila  
(Dental college, TVM)
2. Validation of serum beta HCG 4 weeks post evacuation and cytological atypia as markers of persisting disease in Complete Hydatidiform Moles. : Ongoing Programme  
Dr. Uma (MD OBGY)  
SAT Hospital, Trivandrum
3. Molecular alterations and association with Epstein Bar Virus in Nasopharyngeal Carcinoma : Ongoing Programme  
Dr. Susan James  
(ENT, MCH, TVM)

### Academic credits

#### Dr. Ravindran Ankathil

#### Awards /Honours

Biographical profile included in "2000 Outstanding Scientists & Intellectuals of the 21th Century" First Edition, 2001 by International Biographical Centre, Cambridge, UK.

#### Research Supervision

1. Genetic susceptibility studies in Breast/Ovarian cancer families : Ongoing doctoral Programme  
Mr.B. Vinod Kumar
2. Cytogenetic and Haematologic response studies of biotherapy in patients with Haematological malignancies : Ongoing doctoral Programme  
Mr.S. Hariharan
3. Cytogenetic studies in Myelodysplastic syndromes. : Ongoing doctoral Programme  
Ms.Roshni Thomas
4. Genetic studies in Down syndrome patients with and without malignancies : Ongoing doctoral Programme  
Ms.Sheeja V.R
5. Cytogenetic and Molecular cytogenetic studies in Acute Nontlymphocytic Leukaemias. : Ongoing doctoral Programme  
Mr.Sunil K.S

6. Genetic susceptibility studies in lung cancer : Ongoing doctoral Programme  
Ms. Sreeja L.
7. Pathobiology of BRCA2 gene mutated breast and ovarian cancers : Ongoing doctoral Programme  
Ms. Vani.S

#### Dr. Remani P

#### Research supervision

1. Plant lectins and their applications in oncology : Ongoing doctoral programme  
Ms. Smitha LS
2. Artocarpus integrifolia lectin as a biological marker in hematological neoplasms : Ongoing doctoral programme  
Ms. Lajja S Nair
3. Isolation and purification of some plant lectins and its application in cytopathology : Ongoing doctoral programme  
Mr.Sujathan K.
4. Anti-cancer studies in selected medicinal plants used in traditional and folklore medicine of Kerala with particular reference to the Western Ghats. : Ongoing doctoral programme  
Ms. Geetha B.S
5. Multiparametric evaluation of radiation induced changes in the erythrocytes of cancer patients. : Ongoing doctoral programme  
Ms. Geetha C.S

#### Dr. S. Kannan

#### Research supervision

1. Studies on cell cycle regulatory proteins in oral carcinoma : Ongoing doctoral programme  
Mr. R. Jayasurya

#### Training

1. Annual Immunology training (Two months) for M.D.Microbiology students, Medical College, Trivandrum.
2. Training on Human Cytogenetic Techniques - B.Sc. MLT students - M.G. University

3. Lectures and practical demonstrations on Immunological techniques, Molecular biology techniques, human karyotype analysis etc. to students of M.Sc biotechnology, M.Sc Biochemistry, MBBS, B.Sc MLT, and B.Sc Biotechnology students of Kerala and MG Universities.

#### Patient related investigations for clinical management

Peripheral Blood Lymphocyte Karyotyping	: 328
Bone marrow karyotyping	: 204
Lymphocyte immunophenotyping	: 5
Cell mediated Immune response assessment	: 3

#### Ongoing Projects

- 1. Establishment of a Familial Cancer Registry (1995-continuing)**  
Dr. Ravindran Ankathil, Dr. Aleyamma Mathew, Dr. M. Krishnan Nair
- 2. Biological Prognostic Markers in Oral Squamous Cell Carcinoma (1997 - 2000)**  
S. Kannan, VN Bhattathiri, Elizabeth K Abraham, KR Nalinakumari  
(Funded by Indian council of Medical Research.)
- 3. Genetic susceptibility studies in Breast/Ovarian cancer families (1997-2000)**  
(Funded by Dept. of Science & Technology, Govt. of India)  
Dr. Ravindran Ankathil, Dr. Jayaprakash Madhavan, Dr. Thomas Abraham, Dr. V.P. Gangadharan.
- 4. Evaluation of metastatic potential in gestational trophoblastic disease using adhesion proteins and antimetastatic genes as indicators (1998 - continuing)** Dr. Prabha Balaram, Dr. C. Chandrika Devi. (Funded by Indian council of Medical Research.)
- 5. Cytogenetic and Haematologic response studies of alpha interferon therapy in Chronic Myeloid Leukemia patients (1998-continuing)** Dr. Ravindran Ankathil, Dr. V.P. Gangadharan, Dr. N. Geetha, Dr. Sreejith Neir
- 6. Role of Apoptosis and multidrug resistance related genes in relation to regression in Gestational Trophoblastic Diseases (GTD) (1999-2001)** Prabha Balaram, C. Chandrika Devi.

(Funded by Science, Technology and Environment, Government of Kerala.)

- 7. Role of transforming growth factor alpha (TGF $\alpha$ ) and epidermal growth factor (EGF) as potential indicators of aggressiveness in Gestational Trophoblastic diseases (GTD) (1999-2001)** Molykutty John, Prabha Balaram, C. Chandrika Devi.

(Funded by Indian council of Medical Research, Government of India.)

- 8. Cytogenetic evaluation of genomic instability in Down Syndrome patients with and without malignancies (1999-2001)** Dr. Ravindran Ankathil, Dr. P. Kusumakumary

(Funded by Kerala State Dept. of Science & Technology)

- 9. Evaluation and validation of molecular markers in oral cancer - a Multicentric study. (2001-2004)** Dr. Prabha Balaram, Ramdas K, Nalinakumary KR, Anita Bajan. Funded by DBT, Government of India.

- 10. Molecular alterations in nasopharyngeal cancer with reference to oncogenes and tumour suppressor genes (2001-2004)** Dr. Prabha Balaram, Dr. Ramdas K, Dr. Jayasree K (Funded by Indian council of Medical Research)

- 11. T cell mediated signal transduction: correlation with immune response and response to therapy in patients with cancer of the uterine cervix. (2001-2004)** Dr. Prabha Balaram, Dr. Ganga Devi (Funded by Science, Technology and Environment department, Govt. of Kerala)

## LABORATORY MEDICINE AND TUMOR BIOLOGY

Dr. M. Radhakrishna Pillai

Associate professor

The division continued to lead experimental and translational cancer research in the centre. The current year saw the division attaining two unique honors. The sustained productivity of the division resulted in the Government of India, Department of Science and Technology awarding a "Fund for Improvement of Science & Technology Infrastructure in Universities and Higher Educational Institutions (FIST)" grant. This recurring grant for five years will help the laboratories acquire newer infrastructure for further research and development. The other significant feature was the recognition of the work done by our laboratories in cellular and molecular pathology by the Royal College Of Pathologists, London. Details of the work carried out are available at the Division's website <http://www.mrpillai.freesevers.com/>

### Medicinal Chemistry & Pharmacogenetics

The medicinal plant and natural product research program started last year, has been progressing. As part of this anti cancer drug development program, we have been collaborating with the Agro processing Division of the Regional Research Laboratory, Thiruvananthapuram. Oil obtained from the sesame seed (*Sesamum indicum* L.) has been found to exhibit anti oxidant activity. Both the extract and Standard Sesamol were found to possess significant antioxidant activity in all treated cell lines. The extract as well as Standard Sesamol was also found to induce apoptotic cell death.

### Breast Cancer

The breast cancer research program which completed its first phase, with the elucidation of the role of programmed cell death and treatment response continued with studies on pharmacogenetics and the role of the environment. Polymorphism of the CYP 17 gene was seen in 45% of breast cancers analyzed to date, while it was evident in only 10% of normal controls. Preliminary data obtained show CYP 17 polymorphism to be significantly associated with an increased risk of breast cancer. Genetic variations of the estrogen receptor gene is also

being studied. A polymorphism in codon 325 showed a strong association with a family history of breast cancer. We are now correlating these results to 5-year survival as well as response to tamoxifen.

### Environmental Carcinogenesis

Our environmental carcinogenesis research program has produced results of considerable significance in oral cancer, pediatric leukemia and breast cancer. Factors that influence tobacco-exposed individuals developing a malignancy include a combination of tobacco exposure and genetic susceptibility. We have looked at the significance of genetic polymorphisms in CYP1A1, GSTM1 and GSTT1 genes in patients with oral cancer and age & sex matched healthy controls. Results so far suggest that polymorphism in CYP1A1 m2 gene and/or GSTM1 and GSTT1 null genotype may confer an increased risk for oral cancer. In pediatric acute lymphoblastic leukemia (ALL), the role of these genes can influence both predisposition of a child to leukemia by altered metabolism of carcinogens as well as modulate treatment response by differential interaction with chemotherapeutic drugs. Initial results show that the presence of polymorphic forms of CYP1A1 as well as deletions in GST genes may predispose to ALL development in children. The presence of deletions in GST genes appears however to improve treatment outcome.

### Invasion & Metastases

The process of invasion and metastases forms an important event in the history of any cancer. In the case of oral cancer, the malignant transformation of pre-malignant lesions such as leukoplakia and the spread of invasive oral cancer to regional lymph nodes are important prognostic parameters. Metalloproteinases (MMPs) are a group of proteolytic enzymes that play a crucial role in degradation of the extracellular matrix. All the invasive cancers showed presence of both inactive and active forms of MMP2 and MMP9 activity with varying band intensity. Leucoplakias showed a distinct variation in the enzyme expression pattern. An increased intensity of active form of MMP9 and a reduced intensity of active form of MMP2 was seen in these tissues.

### Radiobiology

Local recurrence is a significant problem following radiotherapy in oral carcinoma and hence there is a paramount need for predictive markers. High levels of p53-accumulated protein detected by

immunocytochemistry were found to be associated with poor response to treatment or disease relapse. p53 mutation also showed significant association with poor prognosis. Low levels of angiogenesis had a correlation with recurrence status. Tumors showing less vascularization as well as increased apoptosis had a poor prognosis. Presence of mutant p53 was suggestive of poor tumor response to radiotherapy. Accumulation of p53 and increased apoptosis in less vascularized tumors was associated with treatment resistance. A predictive assay based on these results designed to analyze individual tumor samples showed presence of apoptotic cells near the vasculature to be indicative of good prognosis, while absence of apoptotic cells or highly proliferating cells and / or expression of bcl-2 protein in cells around the vasculature to be an indicator of poor prognosis.

**Honors/ Awards:** Dr Radhakrishna Pillai was admitted to the Royal College Of Pathologists, London and awarded the MRCPath degree.

#### Ongoing research projects

1. **Telomere dynamics, telomerase activation and epithelial tumor progression.**  
*Funding Agency* : Council for Scientific and Industrial Research.  
*Investigator* : Dr. M. Radhakrishna Pillai.
2. **Cellular immortality and apoptosis during tumor progression in the uterine cervix.**  
*Funding Agency* : Indian Council for Medical Research  
*Investigator* : Dr. M. Radhakrishna Pillai.
3. **Cellular immortality and de novo apoptosis in tumor tissue: significance for response to radiotherapy for cervical cancer.**  
*Funding Agency* : Dept. of Atomic Energy, Govt. of India.  
*Investigator* : Dr. M. Radhakrishna Pillai.
4. **Susceptibility to childhood acute lymphoblastic leukemia: influence of CYP1A1, CYP2D6, GSTM1 & GSTT1 genetic polymorphisms.**  
*Funding Agency* : Council of Scientific and Industrial Research  
*Investigators* : Dr. P. Kusumakumary and Dr. M. Radhakrishna Pillai.

5. **Genotyping of the CYP1A1 and GSTM1 genes in tobacco associated oral cancer.**

*Funding Agency* : Indian Council for Medical Research

*Investigators* : Dr. K. Ramadas and  
 Dr. M. Radhakrishna Pillai.

6. **The role of telomere fragment lengths and telomerase activation during tumor progression in the uterine cervix.**

*Funding Agency* : Kerala State Committee for Science, Technology & Environment

*Investigator* : Dr. M. Radhakrishna Pillai.

7. **Estrogen receptor gene polymorphism in breast cancer and response to tamoxifen treatment.**

*Funding Agency* : Kerala State Committee for Science, Technology & Environment

*Investigators* : Dr. B. Rajan and Dr. M. Radhakrishna Pillai.

8. **Significance of programmed cell death in pediatric acute lymphoblastic leukemia.**

*Funding Agency* : Dept of Science & Technology, Govt. of India

*Investigators* : Dr. P. Kusumakumary and  
 Dr M. Radhakrishna Pillai.

9. **Metalloproteinase gene activation during tumor progression in the oral mucosa.**

*Funding Agency* : Indian Council for Medical Research

*Investigators* : Dr. M. Radhakrishna Pillai.

10. **Fund for improvement of S & T Infrastructure in Universities and Higher Educational Institutions**

*Funding Agency* : Dept of Science & Technology, Govt. of India

*Investigator* : Dr. M. Radhakrishna Pillai.

#### Doctoral and Post-Doctoral Programme Supervision

The following two candidates completed their doctoral program

and submitted theses to the University of Kerala.

Mr. G. Srinivas : Programmed cell death, chemotherapy response and prognosis in pediatric acute lymphoblastic leukemia.

Mr. Pradip Nair : Molecular manifestations of tumor progression in the uterine cervix.

The Division has currently two post-doctoral trainees and 5 PhD candidates working in the Doctoral Programme of the University of Kerala.

- Dr. T.T. Sreelekha : Genetic epidemiology of oral cancer.
- Dr. A. Lakshmi Kesari : The role of folate in human papillomavirus induced carcinogenesis.
- Ms. Priya Chacko : Genetic epidemiology of sporadic Indian breast cancer.
- Ms. Sreevidya. S : Human papillomavirus E6, E7 and p53 gene polymorphism in Indian cervical carcinoma.
- Mr. Thomas Joseph : Influence of genetic polymorphism on susceptibility to and treatment outcome of childhood acute lymphoblastic leukemia.
- Ms. Bindhu. O. S : Metalloproteinases during tumor progression in the oral mucosa.
- Ms. Divya. S : Development of a molecular screening system for potential anti human papillomavirus bioactive compounds.
- Mr Sudeep Parameshwar : Cellular and molecular pharmacology of natural agents with anti tumor activity.

## CLINICAL LABORATORY SERVICES

Ganga Devi C

Technical Officer

This division renders services not only to this centre, but also to other institutions. Other laboratories seek help for quality assurance programme. We are collaborating with BIO-RAD laboratories, California, which is accepted by WHO for external quality evaluation programme.

This is perhaps the only laboratory in Kerala having such a privilege. In addition to this we are collaborating with Christian Medical College, Vellore also for quality control evaluation. Twenty-four hours laboratory services are being provided for the benefit of the patients. On an average nearly 420 samples per day are examined. The Hematology Section has the credit of utilizing fully automatic Coulter Genius (seac), Coulter series and also coagulation analyzer. The analyzer-flagged samples are manually scanned by our technicians to provide accurate results.

In the Biochemical section there are semi-auto wet chemistry analyzer of E-Merck, and SLIM and one fully automatic dry chemistry analyzer from Johnson & Johnson (800 test / hour). In addition special tests like Electrophoresis and Immunoglobulin assay Assistance is provided for various research projects ongoing at RCC.

### Investigations carried out during the year 2000 - 2001

Blood Glucose	-	40100
Urea	-	39800
Creatinine	-	39800
Uric acid	-	9650
Bilirubin	-	21000
SGOT	-	22100
SGPT	-	22100
SAP	-	21800
CCT	-	9200
T.Protein	-	6000
Albumin	-	6000
Cholestrol	-	300
HDL	-	25
Tryglycerides	-	25
LDH	-	4500
Amylase	-	180
Magnesium	-	90
Sodium	-	8100
Potassium	-	8100
Calcium	-	8000
Phosphorus	-	600
CSF Sugar	-	350
CSF Protein	-	350
CSF Microscopy	-	350



Haemoglobin	-	98600
WBC	-	91700
Platelet	-	89800
RBC	-	7000
PCV	-	7000
DC	-	5200
ESR	-	5400
Bleeding time	-	7100
Clotting time	-	7100
Prothrombin time	-	2800
APTT	-	25

#### Urine Analysis

Sugar	-	11500
Albumin	-	11420
Acetone	-	4000
Bile Pigment	-	3100
Urobilinogen	-	3100
Microscopy	-	4250

#### Immunoglobulin Assay

IGA	-	268
IGM	-	268
IGG	-	268
Serum Electrophoresis	-	230

#### Training

This division provided training for BSc. MLT students from Mahatma Gandhi University for two months. Biochemistry training was provided for B.Sc. and M.Sc Biochemistry students from various colleges for two weeks.

## LIBRARY AND INFORMATION SERVICES

Mr.M.Chandrakumaran Nmair

Senior Librarian

In tune with the advancements in technologies, the division adopted appropriate measures and methods to provide effective information support to all clinical, research and other activities of the Centre. Internet, Intranet, CD ROM retrieval, CD Net and other network facilities are introduced. One of the salient works done during the report period is the provision of Internet access to library resources, holdings and RCC publications.

#### Library resources on the Net

Access to library catalogue, RCC publications etc over the Internet has been provided by linking the library's existing Local Area Network to the RCC Web Server and Internet based campus network. This setup strengthened further the use of Internet in the library as it facilitated 24 hours leased line connectivity. A user can make search online the resources of the library using keyword, subject, author, title etc. The catalogue of books and monographs, holdings list of journals, the bibliographic information on the journals which are currently subscribed to by the library, publications of RCC with abstracts from 1981 to date, are accessible online. Users can take advantage of this facility sitting in their residence and search the library catalogue. The Web Inquiry module of Alice for Windows, the library management software, is used for making its collection searchable by the user over the World Wide Web. The URL, <http://192.9.200.148/scripts/webinqu.dll?> locates the above information. Library may also be accessed over the internet using the URL, [www.rctvm.org](http://www.rctvm.org).

#### Collection Development

The Library Committee decided to add 6 journals for 2001. Subscription for three journals were discontinued. The other document added were as follows:

	Added during the year	Collection as on March 2001
Books, Monographs & Back volumes	572	7502
Current Journals	6	107
Reprints and reports	228	3531
Audio-video Cassettes	12	115

### Databases search facility

As the library possesses leased line Internet connection, extensive use of CD ROM as well as online databases was observed during the year. Two nodes were set apart for online and CD ROM searches. All the available CDs are mounted on the CD drives of all the nodes and are accessible simultaneously to all the users. Cancer CD, the most used database covers from 1984 to 2001. Steps have been initiated to procure a CD server for the full utilization of CDs and RCC publications. Bibliographic information with abstracts of 51 papers published by the staff of RCC were added to the 'RCC Publications' database which is accessible over the Internet by author, title and keywords.

### External Users

As the Centre has become the training center for many specialties and projects, the use of library resources by the external users has increased substantially. On an average 25 external users are visiting the library a day. They are making use of all the services except the borrowing.

### Audio Visual and Reprographic support

Audiovisual and projection facilities and photocopying services for all the international/national/regional conferences hosted by the Centre and for various training programmes and workshops conducted by RCC during the period were provided by the division.

### Current Awareness Service

Circulation of 'Onconews' carrying the press clippings on oncology and related aspects and 'RCCL Current Contents' disseminating the contents of current journals and other documents were continued.

### Fellowship/ Honours/ Training

### M. Chandrakumaran Nair.

1. Convener, Publication Committee, Regional Cancer Centre.
2. Assistant Editor, Austral Asian Journal of Cancer
3. Editorial board member, 'SAMANWAYAM', the Regional Cancer Centre house magazine.
4. Elected as Vice President of Kerala Library Professionals Organization in May 2000.
5. Consultant for Dental College Library, Trivandrum and SCERT Library, Trivandrum.

## INFORMATION SYSTEMS

Mr. Neelakantan G  
Mr. Manoj G

Sr. System Analyst (Till 30/11/2000)  
Jr. System Analyst

The main activities of the division are the development, implementation and maintenance of a comprehensive hospital information system. At present the division is equipped with 2 Sco Unix, 1 Linux and 1 Windows 2000 Servers. The entire hospital is connected through fibre links and structured cabling (Nordex Certified) and around 130 PCs are connected to our network.

### Patient Management Services

Patient management Services started with the implementation of modest functionality of patient registration and appointments modules. Later in the second phase we developed the modules such as Accounts & Billing, Ward management, Store management (Central Store & Purchase), Pharmacy Billing, Surgical management, Diagnostic (Cytopathology, Histopathology) and clinical lab management. These modules are maintained in-house by the division. These modules are run in Sco unix and Ingres RDBMS. Forty-five terminals are connected to this network.



## Web Services

Web services were started in January 2001 using a 64K leased line from Bharat Sanchar Nigam Ltd. Internet access is given to all academic staff through the proxy server. Email accounts are given through the mail sever hosted here. The division maintains web sites of RCC and RESPO. Around 40 PCs are connected to our proxy server.

## Tele-Medicine Applications

Division established tele-medicine facility - "OncoNET Kerala" connecting its peripheral centres with a teleclinic in RCC with the technical support of ER&DCI Trivandrum and is funded by Ministry of Information Technology, Govt. of India. As a part of this programme, we started a Medical Documentation Unit and now this unit does abstracting all the case records and entering into the computer. We are planning to introduce online connectivity in ECDC, Ernakulam and Palakkad. A group of doctors at RCC would offer the on-line services.

## Administrative & Financial Network

All the financial transactions like vouchering preparation, vouchering posting, cash receipts, journal entries are done through this network.

## Cancer Registry Network

The Hospital Based and Population Based Cancer Registries are fully computerized and online data checking and searching facilities are available on intranet.

## Other Activities

This division helps the academic staff in preparation of papers for publication and presentation materials. The troubleshooting and routine maintenance (hardware and software) of the personal computers installed at various divisions are also being done by this division. Database of members of cancer care for life (scheme II and III) and issue of membership certificates are also done in this division. Apart from this, the division is also giving project guidance to BSc (Computer Science), PGDCA, MCA students of various colleges. Last year this division gave guidance to 24 students from various colleges.

## COMMUNITY ONCOLOGY

Dr. Babu Mathew	Professor
Dr. Ramani Wesley	Associate Professor
Dr. Gigi Thomas	Lecturer

The major activities of this division are centered round, human resource development, awareness and detection camps, health education and community based cancer research.

### 1. Human Resource Development

#### a) Professional education and training:

Seventeen gynaecologists, 1848 health workers and 226 nurses were trained in low cost cancer detection strategies to initiate cancer control in Kerala and Tamil Nadu. Short-term training was given to nursing students of private hospitals and Government Medical Colleges and orientation training was given for cytotechnologists and cytotechnicians from other centres. Training in colposcopy and LEEP was given for gynaecologists and doctors of UNFPA. An intensive training in colposcopy was conducted for doctors and nurses at Kenya organised by PATH, SEATTLE and also at Chittaranjan National Cancer Institute, Kolkatta. A workshop on oncology training for general nurses sponsored by WHO was conducted by this division.

#### b) Public education

Fifty-five cancer awareness programmes were carried out to members of voluntary agencies. 825 community volunteers, 2604 NSS volunteers, 179 health workers, 336 ICDS Anganwadi workers, 100 literacy workers, 56 NSS Programme Officers were specially trained in cancer awareness as key trainers. 825 volunteers were trained for cancer survey and screening. The details of cancer awareness programme are given in Table 1. Teachers, PTA and student

representatives (3039) were given tobacco education and cancer education classes. Voluntary workers of HOPE Foundation were trained. They are involved in-group activities like early detection of TB and cancer. The idea is to set out a new plan for cancer detection/prevention by regular house visiting in this district. They referred 26 cases for confirmation of diagnosis.

## 2. Generation and distribution of health education materials

- a) About 450 slides and 5 photo albums on colposcopy were prepared for training. The health education materials generated during previous years were distributed among community volunteers and other target groups.
- b) Six programmes through AIR Trivandrum Station were broadcast. Two programmes through ASIANET, one programme each in Surya television and Doordarsan Kendra, Trivandrum were telecast during the period under report.
- c) Four exhibitions were conducted which were viewed by school and college students and lay public

## 3. Antitobacco programmes and campaigns

In addition to the tobacco cum awareness programme mentioned in Table 1, a week long awareness programme for target groups like health workers, community volunteers, working journalists, supervisory staff of Social Welfare Department, office employees and activists of consumer protection forum were held from 25th May to 31st May 2000. The "World No Tobacco Day" was observed on 31st May with a workshop on the current year's theme, "Tobacco kills - Don't be duped" at RCC for college students, a public meeting at YMCA and at VJT hall. Voluntary organisations like Regional Cancer Association, Alcohol and Drug Information Centre, International Union for Health Promotion and Education and Bharath Scouts and Guides collaborated with RCC to observe "World No Tobacco Day" and in organising Antitobacco programmes.

A collaborative programme with the National Service Scheme (NSS) of Kerala University was launched during the period under report. A workshop for NSS Programme Officers working in the various colleges affiliated to the University of Kerala was conducted in RCC. It was decided that all units of NSS would take up Antitobacco education and advocacy campaigns during the ten-day camping activity in the current academic year. To enable the NSS volunteers to take up this programme;

ten regional training programmes were held in the month of November at different colleges.

Mr. Allan Landers, WHO's Ambassador for propagating Antitobacco messages among youth visited Trivandrum on 20th of October. Several programmes were arranged in the various colleges and schools in Trivandrum.

## 4. International School of Colposcopy

An International School of Colposcopy to train doctors, gynaecologists, nurses, and field workers from developing countries was organised in this year. A video colposcope is used for demonstration. We have already trained 8 gynaecologists from Kerala in colposcopy, biopsy, treatment of preinvasive lesions by LEEP and cryotherapy. We are teaching low cost cervical cancer detection strategies using vinegar and Schiller's iodine to doctors, nurses, field workers and technicians.

## 5. Early cancer detection clinic, Dysplasia clinic, Colposcopy clinic and Breast screening clinic

An early cancer detection clinic is functioning in this division to examine patients with warning signals of cancer. 1926 patients were registered during this year. 41 oral cancers, 24 breast cancers, 38 cervical cancers and 14 other cancers were detected. 223 oral precancerous conditions were diagnosed and kept under surveillance during this year.

In the dysplasia clinic, among the 223 cases of oral precancer diagnosed, 86 patients had leukoplakia, 72 had Oral Sub Mucous Fibrosis (SMF), 24 had Lichen Planus while 41 had other benign oral lesions. Patients having Leukoplakia were treated by chemoprevention or by excision. Precancerous conditions like SMF and Erosive Lichen Planus are given medication and kept under close follow up. Biopsies were done for 110 high-risk oral precancers. 76 precancers were surgically excised.

In the colposcopy clinic, 1876 colposcopies, 278 colpo directed biopsies, 10 LEEP diathermic excisions and 12 cryotherapies were done for cervical precancers.

Breast screening clinic is conducted on Tuesdays and Thursdays. Here, propagation of breast self examination, FNAC's and discharge collection for cytology and referral for mammography are done.

## 6. Peripheral Early Cancer Detection Programmes through ECDCs, Janakeeya Ascothranam programs and Village level Cancer Control Programmes

ECDC, Kollam is sending patients with precancers and cancers to ECDC clinic, Trivandrum for confirmation of diagnosis, colposcopy, LEEP etc. Early cancer detection work started in Kodungalloor named as Health Care Institute is conducting camps once in four months. Doctors, nurses, health workers and volunteers who act as keytrainers are trained for conducting comprehensive Village Level Cancer Control Programmes in Kodungalloor. The main stay of peripheral cancer detection programmes was through 26 cancer detection camps, the details of which are shown in Table No:2. As part of Village Level Comprehensive Cancer detection Programmes, seven new villages were included. 2321 volunteers were trained to carry out cancer related survey.

### Ongoing research projects

#### 1. Evaluation of unaided visual inspection, cervicospopy and Pap smear in screening for cervical cancer (Funded by IARC, France)

Principal Investigator Dr. Ramani.S.Wesley  
Co-Investigators Dr.Thara Somanathan, Dr.Namratha,  
IARC Investigators Dr.Sankaranarayanan, Dr.D.M. Parkin

The study is to evaluate whether visual inspection of cervix using 3% acetic acid (cervicospopy) permits improved detection of invasive and pre invasive lesions compared to unaided visual inspection and to determine whether cervicospopy can improve the sensitivity of Pap-smear. The third phase of this study is going on this year including schillers test, cervicospopy, colposcopy and biopsy for all relevant cases to evaluate low cost technologies. We have recruited 1876 women this year. 32 cancers, 54 high-grade lesions and 202 low-grade lesions were detected.

#### 2. Comparative evaluation of early detection of cervical cancer precursors by visual inspection with acetic acid and by Schiller's iodine (Funded by IARC, France)

Principal Investigator Dr. Ramani.S.Wesley  
Co-Investigators Dr.Thara Somanathan, Dr.Namratha  
IARC Investigators Dr.Sankaranarayanan, Dr.D.M. Parkin

The study is to estimate the sensitivity, specificity and positive as well as negative predictive value of visual inspection with acetic acid (VIA) and visual inspection with Schiller's iodine (VIS) in detecting cervical intraepithelial neoplasia and cervical cancer. It evaluates whether a combination of VIA and VIS in parallel improves early detection by increasing specificity without loss of sensitivity in comparison with either test alone; and compares the performance of VIA, VIS and VIA plus VIS with that of cervical cytology. We propose to carry out a formal evaluation of visual inspection with Schiller's iodine as independent screening test or as an adjuvant to other tests in the early detection of cervical neoplasia. Women aged 30 years and above attending the early detection programmes and the open-access clinics organized by the Community Oncology Division of RCC, Trivandrum, Kerala, India, will be recruited into the study.

### 3. Cervical Cancer Control Project

(Funded by Bill Gates Foundation, U.S.A)

Principal Investigator Dr.Ramani.S.Wesley  
Co-Principal Investigator Dr.B.Rajan  
Co-Investigators Dr.Namratha, Dr.Chitrathara,  
Dr.Paul Sebastian, Dr.Thara Somanathan

The project is to start an International School of Colposcopy as a nodal training centre for developing countries where Gynaecologists, doctors, nurse practitioners, health workers can be given training on low cost cervical cancer detection strategies, colposcopy, Loop Electrosurgical Excision Procedures, Cryotherapy, Cauterisation, biopsies etc. for investigating and therapeutic procedures of preventing cancer cervix.

#### 4. Trivandrum Oral Cancer Screening Study (TOCS): Population based screening for oral malignant and premalignant lesions

(Funded by IARC France and AICR U.K)

Principal Investigator Dr.Babu Mathew  
Co-Investigators Dr.M.Krishnan Nair, Dr.Ramadas,  
Dr.Paul Sebastian, Dr.Manoj Pandey,  
Dr.Elizabeth Abraham, Dr.Gigi Thomas,  
Dr.Thara Somanathan,  
and Ms. Binu Kuruvila

IARC Investigators: Dr.R.Sankaranarayanan, Dr.P.Pisani and Dr.D.M.Parkin

The aim of this randomised intervention trial is to evaluate the effectiveness of mouth self examination by trained workers in preventing mouth cancers, detecting invasive oral cancer at an early stage and preventing deaths from oral cancer. Approximately 90,000 subjects aged 34 and above, living in two community development blocks of Trivandrum district, are recruited and randomised to screening and control arms. The subjects are advised to give up tobacco habits. Pre cancers and cancers are being treated. The study group is followed up for oral cancer incidence and mortality. The first phase was completed on May 31, 1998. Among the 49,179 subjects screened by trained workers in the intervention area, 1350 patients were found to have precancerous lesions. 308 biopsies and 120 surgical excisions were done for project patients.

The second phase of the study is ongoing since June 1998. A total of 43,356 subjects have been screened in the intervention area and 40,770 subjects have been interviewed in the control area during this period. Preliminary findings on oral cancer incidence show that 54% of the incident cancers in the intervention group were diagnosed in stages I and II as opposed to 22% in the control arm. The case fatality rates are 39.8% and 51.9% in the intervention and control groups respectively. Among the 43,356 subjects screened in the intervention area, 595 individuals have been referred and 377 (63.4%) complied with referral and biopsies were obtained from 276 individuals. 68 subjects with non homogenous leukoplakia have undergone excision.

### 5. Role of Vitamin A prophylaxis in preventing malignant transformation of oral premalignant lesions

(Funded by IARC France and AICR U.K)

Principal Investigator: Dr.Babu Mathew  
Co-Investigators: Dr.M.Krishnan Nair, Dr. Chandralekha, Dr.Ramadas, Dr.Thara Somanathan, Dr.Gigi Thomas Ms. Binu Kuruvila  
IARC Investigators: Dr.R.Sankaranarayanan and Dr. D.M. Parkin

Cases of Leukoplakia recruited in the TOCS study that cannot be surgically excised were recruited for the chemoprevention study. The subjects were randomised into 2 groups and the intervention group is

given 20,000 IU of Vitamin A monthly. Compliance to follow up is not satisfactory and hence the investigators are not keen to continue the trial.

### 6. Study of Tobacco Related mortality in Trivandrum District

(Funded by Oxford University, U.K)

Chief Investigator: Dr.Babu Mathew  
Co-Investigator: Dr. M. Krishnan Nair  
External Investigators: Dr.Richard Peto, Dr.R. Sankaranarayanan

Information was collected about the deaths that have occurred between 1995-2000 from 14 panchayaths of the Trivandrum district. Information is collected about the dead from the surviving spouse or nearest relative. The hospital records if any available are examined and a panel of doctors ascertains cause of death by studying the information collected. The dead are members of a cohort of the TOCS study and therefore, the information is available in the TOCS data bank about their tobacco alcohol habits. Information of 7,165 deaths has been collected during this period.

### 7. Global Youth Tobacco Survey Programme

(Funded by WHO Geneva)

Chief Investigator: Dr.Babu Mathew  
Co-investigator: Sri.C.Sreekumar  
External investigator: Dr.Warren Wick, CDC, Atlanta, U.S.A, Dr.Derek Yach, WHO, Geneva and Dr.F.Railey, WHO, Geneva

This is a programme to conduct a KAP survey of tobacco among school children aged 13-15 years in Kerala. This is part of a global study and 6 states in India are taking part in it.

### Other activities

#### Assistance to Thesis/Dissertation/ Projects

Assistance in the design, implementation and analysis has been provided to researchers, postgraduate students (for dissertation and thesis) MSc nursing and MSW students and college/school students to prepare their project work.



### Welfare activities for the poor

We provided counselling, financial help, and arranged accommodation facilities to poor patients and acted as liaison between camp patients and RCC.

### Provision of Information

Leaflets, pamphlets, books, and exhibits information about cancer was given to patients, bystanders, voluntary agencies routinely. Psycho-social support was given for removal of cancer stigma and for motivation of patients to undergo treatment.

### Awareness programmes through electronic media

#### Television

1. Pannel discussion on "Tobacco kills Don't be duped" at Doordharsan 31-5-2000 (22 mts programme)
2. 'Morning guest' at Asianet on 31-5-2000 discussing activities of Community Oncology especially Tobacco control activities (Duration 40 mts).
3. 'Nammal Thammiil' in Asianet on 16-10-2000 on the ban of smoking in public places by the Honorable High Court (30 mts).

#### Radio

1. Pannel discussion on the theme of World No-Tobacco Day 2000. 20 mts programme. Broadcast on 2-6-2000, AIR Trivandrum.
2. Milestones in the last millennium a seminar on Advancement in the field of cancer prevention diagnosis, treatment and palliative care. 30 mts, AIR, Trivandrum.
3. Talk on cancer control. 8 mts during Prakashadhara, AIR, Trivandrum.
4. Oral Cancer Prevention and control talk for 10 mts, Akashvani Kannur.
5. Talk on "Warning Signals of Cancer" AIR Trivandrum
6. Talk on "Health hazards of Panmasala" AIR, Trivandrum

Table 1. DETAILS OF CANCER AWARENESS PROGRAMMES 2000-01

SL NO	DATE	PLACE	ORGANISED BY	ATTEN DIED	TYPE OF PARTICIPANTS
1	13/05/00	Panamattom	Deviya Vayanasala	60	Community Volunteers
2	18/05/00	Kottayam	RCC	30	B.Sc nursing students
3	20/05/00	Kottayam	Homeopathic Doctors	84	Community volunteers
4	25/05/00	RCC	RCA and RCC	54	Health workers
5	26/06/00	Velland	RCA and RCC	93	Community Volunteers
6	29/05/00	RCC	RCA and RCC	35	Activists of Consumer Protection Forum
7	30/05/00	A.G's Office	RCA and RCC	75	Employees of A.G's office
8	31/05/00	YMCA	RCA and RCC	62	Community Volunteers
9	10/06/00	Paravoor	Saksharatha Samithi	100	Saksharatha workers
10	12/06/00	RCC	RCC	30	B.Sc Nursing students
11	19/06/00	RCC	RCC	5	M.Sc Nursing students
12	24/06/00	Kottayam		108	Community Volunteers
13	16/07/00	Sasthamkotta	NSS	467	NSS Volunteers
14	23/07/00	Vanchiyoor	Vanchiyoor UP school	107	Local public
15	26/07/00	Trivandrum	Christ Niagar School	83	School children
16	28/07/00	Sasthamangalam	Surya Gardens Residence Association	89	Lay Public

17	04/08/00	Konchiravila	RCA	125	Health Workers
18	11/08/00	Kamaleswaram	RCA	124	Anganwadi health workers
19	12/08/00	Kollam and Karunagappally	ICDS	212	Anganwadi health workers
20	18/08/00	Varkala	NSS	900	NSS volunteers
21	19/08/00	Trivandrum	Lakshmi Nagar Residence Association	107	Lay Public
22	20/08/00	Pottakuzhy	Pottakuzhy Residence Association	106	Lay public
23	14/09/00	RCC	RCC	15	Nursing Assistants
24	16/09/00	RCC	RCC	15	Nursing Assistants
25	22/09/00	Kattakkada	CSI Church	159	Lay Public
26	28/09/00	YWCA	Asraya	59	Women Volunteers
27	30/09/00	Kayamkulam	MSM College	185	NSS Volunteers
28	06/10/00	RCC	RCC	5	Post graduate Medical Students
29	10/10/00	RCC	RCC	56	NSS Programme Officers
30	11/10/00	RCC	RCC	30	B.Sc Nursing Students
31	13/10/00	Kowdiar	Christ Nagar School	256	School students
32	20/10/00	RCC	RCC	50	Lay public
33	19/10/00	St.Thomas School	RCC	1250	School students
34	21/10/00	Christ Nagar School	Christ Nagar School	1500	Students and teachers
35	27/10/00	Devaswom Board	CSI church	150	Lay public

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36	28/10/00	Panachimoodu	Panachimoodu Residence Association	54	Lay Public
37	30/10/00	Thycaud	Training Centre, Thycaud	44	Health Inspectors
38	01/11/00	Punalur	SN college	124	NSS Volunteers
39	02/11/00	Kollam	SN College	129	NSS Volunteers
40	03/11/00	Trivandrum	University College	60	Teachers
41	06/11/00	Trivandrum	Loyola College	287	NSS volunteers
42	07/11/00	Kallara Pangoth	Mannania College	320	NSS Volunteers
43	08/11/00	Kayamkulam	MSM College	296	NSS Volunteers
44	09/11/00	Kollam	TKM College	175	NSS Volunteers
45	10/11/00	Pandalam	NSS College	258	College Students
46	11/11/00	Chenganoor	Christian College	194	NSS Volunteers
47	18/02/01	Chathanoor	CSI Church	75	Lay Public
48	01/12/00	RCC	M.G. University	30	Lab technicians
49	08/12/00	Poovar	CSI	265	Community Volunteers
50	15/01/01	Mangalapuram	Manjalapuram Panchayath	35	Lay Public
51	02/02/01	RCC	RCC	30	B.Sc Nursing students
52	07/02/01	RCC	RCC	30	B.Sc Nursing students
53	18/02/01	Chathanoor	CSI Church	75	Lay Public
54	17/03/01	Trivandrum	Asraya	94	Volunteers
55	20/03/01	Trivandrum	RCC	30	Staff Nurses

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Table 2. DETAILS OF CANCER DETECTION CAMPS 2000-01

Sl. No	Date	Place	Organised by	Total Screened	New Can	Old Can cers	Oral Pro-cers	Other pre-can cers
1	02-04-00	Pettah	Vadayakkad Residents Association	100	0	-	0	0
2	07-04-00	Thundathil	B.Sc nursing students	152	-	-	-	4
3	28-04-00	Attingal	Social Welfare group	150	-	-	4	5
4	30-04-00	Puliyarakonam	Sathyasai Asramam	168	-	1	1	4
5	06-05-00	Kodungalloor (Irinjalakuda)	Health Care Institute	315	5	6	4	6
6	14-05-00 & 15-05-00	Kannur	-	203	3	-	6	10
7	18-05-00	Thannithode	PHC Thannithode	153	2	-	22	10
8	19-05-00	Chaikottukonam	PHG Chaikottukonam	84	-	-	2	14
9	20-06-00	Noyyatinkara	Mother India	204	-	-	10	12
10	16-08-00	Kadavoor	Kadavoor Library	105	4	-	10	5
11	19-08-00	Vanchiyoor	Vanchiyoor UP School	120	3	2	14	18

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12	25-08-00	Vizhinjam	Foundation for Integrated Research and Mental Health	85	-	-	-	18
13	26-08-00	Varkala	KISS Foundation	25	-	-	-	3
14	27-08-00	Kodungalloor	Health Care Institute	509	3	-	25	17
15	29-09-00	Neeleswaram	Marthoma Church	286	3	3	7	9
16	01-10-00	Thrikkadavoor	Thrikkadavoor Sahitya Samajam	407	7	2	17	5
17	02-10-00	Kattela	Karunya Sadanam	72	0	0	0	0
18	08-10-00	Kadakkavoor	United Christian Movement	850	2	3	18	2
19	13-10-00	Kamaleswaram	RCA	58	-	-	-	-
20	15-10-00	Nemom	Santhivila Residence Association	260	3	0	7	6
21	26-11-00	Parippally	NNM Hospital	134	-	0	2	2
22	28-01-01	Kumarakom	SNDR, Kumarakom	275	5	3	17	14
23	04-02-01	Kodungalloor	Health Care Institute	540	3	0	12	16
24	11-02-01	Vattinad	Y's Men	175	2	0	2	4
25	19-02-01	Nattayam	Prashanth Swami Ashramam	351	1	-	4	3
26	26-02-01	Kovalam	KISS Foundation	85	-	0	-	5
27	19-03-01	Attingal	CSI Church	175	3	0	8	6
TOTAL				6041	49	20	192	199

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## E.C.D.C, ERNAKULAM

Dr. B. Syamalakumari                      Cytopathologist

The early cancer detection centre, Ernakulam, one of the peripheral centers of RCC, Trivandrum, conducts of cancer detection camps, awareness programmes, cytology, histology, and colposcopy directed biopsy services, follow-up and pain clinics and the district cancer control programmes.

**Table 1. Resume of work done 2000-01**

Particulars of work done	ECDC	DCCP	Total
Persons screened	6905	5378	12283
Cervical smears	3595	3375	6970
Oral smears	182	447	629
Fine Needle Aspiration	1983	529	2512
Sputum cytology	74	...	74
Histopathology	54	...	54
Colposcopy	57	...	57
Colpoidirected Biopsy	18	...	18
Body fluids	54	...	54

**Table 2. Gynecological cytology**

Lesion	Centre	Follow-up	Total
Normal	17	129	200
Inflammation	1230	513	1743
Atypical glandular cells	39	11	50
Trichomonas vaginalis (TV) infection	548	184	732
TV with mild dysplasia	59	20	79
TV with moderate dysplasia	13	5	18
TV with severe dysplasia	6	2	8
Fungal infection	12	3	15
TV with fungus	2	1	1
Human Papilloma virus infection	5	3	8
Herpes simplex virus infection	189	76	265
TV with virus infection	140	38	176
Viral infection with mild dysplasia	77	16	93
Viral infection with moderate dysplasia	23	11	34
Mild dysplasia	7	3	10
Moderate dysplasia	42	23	65
Severe dysplasia	10	6	16
Atrophic atrophy	11	4	15
Carcinoma in-situ	1	-	1
Invasive squamous cell carcinoma	2	-	2
Adenocarcinoma	49	-	49
Radiation changes	4	-	4
Miscellaneous	2	-	2
Viral infection with severe dysplasia	6	1	7
<b>Total</b>	<b>2648</b>	<b>947</b>	<b>3595</b>

**Table 3. Non-gynaecological cytology**

Lesions	No.
<b>Oral lesions:</b>	
Benign	63
Pre-malignancy	10
Suspicious	2
Malignant	105
Miscellaneous	2
<b>Total</b>	<b>182</b>
<b>Aspirations Breast:</b>	
Benign	598
Suspicious	4
Malignant	139
Miscellaneous	2
<b>Total</b>	<b>743</b>
<b>Aspirations Thyroid:</b>	
Benign	497
Suspicious	4
Malignancy	15
<b>Total</b>	<b>516</b>
<b>Lymphnode:</b>	
Benign	376
Suspicious	3
Malignancy	
a. Primary	14
b. Secondary	57
Miscellaneous	5
<b>Total</b>	<b>455</b>
<b>Salivary Gland:</b>	
Benign	41
Suspicious	1
Malignancy	7
<b>Total</b>	<b>49</b>
<b>Liver:</b>	
Benign	6
Malignancy	5
<b>Total</b>	<b>11</b>
<b>Lungs:</b>	
Benign	-
Malignancy	2
<b>Total</b>	<b>2</b>

<b>Other Sites:</b>	Benign	187
	Suspicious	-
	Malignancy	18
	Miscellaneous	2
<b>Total</b>		<b>207</b>
<b>Ascitic fluid:</b>	Benign	3
	Malignancy	1
<b>Total</b>		<b>4</b>
<b>Pleural fluid:</b>	Benign	4
	Suspicious	1
	Malignancy	2
<b>Total</b>		<b>7</b>
<b>Peritoneal fluid:</b>	Benign	1
<b>Nipple discharge:</b>	Benign	42

**Table 4. Sputum Cytology**

Lesion	No (74)
Benign	51
Suspicious	2
Malignancy	17
Miscellaneous	4

**Table 5. Histopathological Examination**

Specimen	Benign	Ca-in-situ	Malignant	Total (54)
Gynaecological	20	2	1	23
Breast	4	-	3	7
Oral	2	-	1	3
Other sites	11	-	10	21

**Table 6. DCCP Resume of Work**

Total persons screened		5378
Oral	Non-malignancy	316
	Pre-malignant lesions (Clinical/Cytological)	124
	Malignancy	7
	<b>Total oral smears</b>	<b>447</b>
Breast	Non-malignancy	124
	Malignancy	11
	Suspicious Malignancy	1
	Miscellaneous	34
	<b>Total breast aspiration</b>	<b>170</b>
Cervix	Non-malignancy	3206
	Pre-malignant lesions	158
	Malignancy	11
	<b>Total cervical smears</b>	<b>3375</b>
Thyroid	Benign	113
	Malignancy	1
	Suspicious	1
	Atypia	1
	Miscellaneous	5
	<b>Total thyroid aspiration</b>	<b>121</b>
L.N	Benign	28
	Granulomatous	33
	Suspicious	1
	Malignancy	11
	<b>Total L.N aspirations</b>	<b>74</b>
Other Sites	Benign	102
	Suspicious	1
	Malignancy	4
	Miscellaneous	57
	<b>Total</b>	<b>164</b>

**E.C.D.C., PALAKKAD**

Dr. Kalavathy M.C Lecturer

Smt. Veena V.S. Cytotechnologist

The Early Cancer Detection Centre, Palakkad, one of the peripheral centres of RCC Trivandrum, offers facilities for cancer awareness, early cancer detection, chemotherapy, pain and palliative care management. The major activities were focused on "Cancer Free Palakkad", Cancer awareness classes, and cancer detection camps for the following 3 different population groups were conducted.

1. People coming to District and Taluk Hospitals, Primary Health Centre and other Private Hospitals.
2. People from tribal areas such as Agali, Sholayoor, Pudur, Attappadi, and Walayar.
3. People who are working in different companies and those who are residing near the industrial area.

The centre has conducted 57-cancer awareness classes and 22 cancer detection camps in the reporting year. A total of 7088 persons were screened of which 2086 persons were screened at the centre and the rest were in the camp.

**Table 1. Details of cytological smears for the year 2000-01**

Specimen	ECDC	Camp	Total
Cervical smears	494	578	1072
Oral smears	53	43	96
Sputum	163	-	163
Breast (FNAC)	33	15	48
Thyroid (FNAC)	5	6	11
Lymphnode (FNAC)	4	0	4
Nipple discharge	2	0	2
Fluids	5	0	5
Other sites	48	40	88
<b>Total</b>	<b>807</b>	<b>682</b>	<b>1489</b>



**Table 2. Analysis of Gynaecological specimens 2000-01**

Lesion	Centre (494)	Camps (578)	Total (1072)
Normal	61	158	219
Inflammation	251	272	523
Inflammation with glandular cell proliferation	25	16	41
Trichomonas vaginalis (TV) infection	34	59	93
Fungal infection	21	19	40
Trichomonas & Fungal infection	1	0	1
Viral infection	3	1	4
Mild dysplasia	11	0	11
Infection with mild dysplasia	30	19	49
TV infection with mild dysplasia	2	1	3
Fungal infection with mild dysplasia	6	7	13
Viral infection with mild dysplasia	1	0	1
Inflammation with moderate dysplasia	3	4	7
TV infection with moderate dysplasia	1	0	1
Glandular cell atypia	12	11	23
Severe dysplasia/Carcinoma in-situ	3	2	5
Atypical/Suspicious	3	2	5
Squamous cell carcinoma	12	2	14
Radiation changes	4	1	5
Autolytic atrophy	6	3	9
Miscellaneous	3	1	4

**Table 3. Analysis of Non-Gynaecologic lesions for the year 2000-01**

Specimen	Centre(313)	Camp (100)	Total (413)
<b>Oral smear</b>			
Normal	16	21	37
Inflammation	17	13	30

Dysplasia	16	1	17
Atypical/Suspicious	—	7	7
Malignant	4	1	5
Total	53	43	96

**Sputum cytology**

Non-malignant	141	—	141
Atypia/Suspicious	3	—	3
Malignant	19	—	19
Total	163	—	163

**Breast (FNAC)**

Non-malignant	24	10	34
Fibro-adenoma	2	—	2
Atypia/Suspicious	2	3	5
Malignant	5	2	7
Total	33	15	48

**Thyroid (FNAC) Non-malignant** 5 6 11

**Lymphnode**

Non-malignant	1	—	1
Lymphadenitis	1	—	1
Malignant	2	—	2
Total	4	—	4

**Fluids**

Non-malignant	2	—	2
Malignant	3	—	3
Total	5	—	5

**Nipple discharge**

Non-malignant	2	—	2
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**Other sites**

Benign	26	33	59
Malignant	2	3	5
Total	28	36	64

**Table 4. Pain and palliative care clinic 2000-01.**

New cases registered	107
Follow-up cases	394

**CONFERENCES/SEMINARS/TRAINING/WORKSHOPS ATTENDED BY VARIOUS STAFF**

Dr. Aleyamma Mathew  
Asst. Prof. in Statistics &  
Epidemiology

American Association for  
Cancer Research, New Orleans,  
USA, March 2001.

European conference on nutrition and  
Cancer, Lyon, France 2001.

Dr. Anitha Mathews  
Asst. Professor in Cytopathology

IAPM Kerala Chapter - SCTJMST,  
Trivandrum, 2000.

IAPM Kerala Chapter - TD Medical  
College, Alleppey, 2000.

Challenges in Surgical pathology, Me-  
dial College, Thirunelveli, 2000.

CME on Paediatric Tumour Pathology,  
Tata Memorial Hospital, Mumbai,  
2000.

Dr. Aswin Kumar  
Lecturer in Radiotherapy

WHO Workshop on Healthcare in the  
Elderly, Trivandrum, March 2000.

Dr. Babu Mathew  
Prof. Of Community Oncology

Guest lecture, Seminar on Oral can-  
cer decennial celebrations of the  
Savitha Dental College, Chennai,  
June 2000.

Moderator in the session Strategies  
for tobacco control for developing  
countries. 11th World Conference on  
Tobacco or Health. Chicago, U.S.A,  
6-11 August, 2000.

Mrs. Beena Kumari  
Staff nurse.

Dr. Bipin T. Varghese  
Asst. Professor in  
Surgical Oncology

Mr. M. Chandrakumaran Nair  
Senior Librarian

Dr. B. Chandralekha  
Professor of Cytopathology

Guest lecture, Workshop on Tobacco diversification Centre for Multi Disciplinary Research, Dharwar. 29-30 November 2000.

Guest lecture, Annual Conference of the Indian Academy of Oral Medicine and Radiology, Chennai 10-11 Dec. 2000.

Workshop on Palliative Care, PSG College of Nursing, Coimbatore, 2000.

Advanced International workshop on Cancer Pain and Palliative care, RCC, Trivandrum, 19-23 June 2000.

Annual State Conference of Association of Plastic Surgeons of India, Kerala Chapter, Cochin, April 2001.

1st Masters course in Head and Neck Surgery. Organised by Tata Memorial Hospital Mumbai, India and the Indian Society of Head and Neck Oncology, Mumbai Oct 30 - Nov 2nd 2000.

INSDOC/KAU Workshop on Information infrastructure Kerala Agricultural University, Thrissur, 24 April 2000.

Invited lecture, workshop on Educational technology for nursing education, College of Nursing, Trivandrum, 28 February 2001.

8th International Congress on Medical Librarianship, London, 2-5, 2000.

IAPM, Kerala Chapter at Trivandrum, June 2000

Dr. Cherian Koshy  
Asst. Professor in  
Surgical Oncology

Dr. Elizabeth K. Abraham  
Professor of Cytopathology

Dr. Elizabeth M. Iype  
Medical Officer in  
Surgical Oncology

CME and IAC 30th Annual Conference, Nagpur, November 2000

CME on Breast Cancer, RCC, Trivandrum, November 2000.

Advanced International workshop on pain sponsored by John's Hopkins University, Trivandrum, June 2000.

Second Europea Breast Cancer Conference at Brussels, Belgium, September 2000.

Indian Association of Pathologists and Microbiologists -Kerala Chapter, Meeting at SCTIMST, Trivandrum, June 2000.

Indian Association of Pathologists and Microbiologists, Kerala Chapter, TD Medical College, Alleppey, October 2000

CME on Breast Cancer, RCC, Trivandrum, November 2000.

National CME, Challenges in surgical pathology, Medical College, Tirunelveli 2000.

State annual conference of association of otolaryngologists of India, Kechi, May 2000.

First Masters course in Head and Neck Surgery, Tata Memorial Hospital, Mumbai, and the Indian Society of Head and Neck Oncology. Oct 30 - Nov 2nd 2000.

CME on phonosurgery AOI Kerala chapter, November 2000.

CME on allergic rhinitis, AOI branch, Trivandrum, January 2001.

Ms. Elsamra Joseph  
Staff nurse

Dr. Firoz R  
Lecturer in Surgical Oncology

Dr. Francis V. James  
Assoc. Professor of Radiotherapy

Mr. P. Gangadharan  
NBRR

Dr. Geetha N  
-Assoc. Prof in Medical Oncology

Mr. Giri Purushothaman  
Lecturer in Elect. Engineering

Dr. P. Jayalakshmi  
Sociologist

Dr. Jayaprakash Madhavan  
Assoc. Professor in Radiotherapy

Dr. F. Joseph Memorial CME on Palliative Care and Advanced International Workshop on Pain, RCC, Trivandrum

Workshop on upper GI endoscopy, centre for Endoscopy Digestive diseases, Coimbatore, May 2000.

Invited lecture, CME on Medical Oncology, Calicut, October 2000.

National surgical update, Trivandrum, July 2000.

Invited lecture, Dr. F. Joseph memorial CME on Palliative care, October 2000.

10th Swadesi Science Congress, Kochi, 7-9 November 2000.

National Seminar on Atomic Energy & Environment, Thiruchirappally, 8-9 February 2001.

32nd meeting of the International society of paediatric oncology, Amsterdam, October, 2000.

International conference on Bio Medical Engineering, Anna University Chennai, 22-26, January 2001.

10th Swadesi Science Congress, Kochi, 7-9 November 2000.

Tumour Registry Workshop, Gandhi Medical College, Bhopal, conducted by NCRP-ICMR, 2000.

AROI Kerala Chapter meeting 2000.

Dr. Jayasree K  
Assoc. Professor of  
Cytopathology

Dr. Jem Prabhakar  
Asst. Professor in  
Surgical Oncology

Dr. Kannan S  
Asst. Professor of Cancer  
Research

Ms. Kumari Thankom  
Nursing Officer

Dr. Kusuma Kumari P  
Assoc. Prof. in Paediatrics  
Oncology

International Cancer Conference,  
Agra, 2000.

IAPM Kerala Chapter, Trivandrum,  
June 2000.

IAPM Kerala Chapter, Alleppey,  
October 2000.

IAC 30th Annual Conference, Nagpur,  
November 2000.

Faculty, CME on FNA of Abdominal  
masses, Nagpur, November 2000.

Workshop on Advanced Endoscopy,  
Centre for Digestive diseases,  
Coimbatore, May 2000.

7th Asia Pacific Electron Microscopy  
Conference, Singapore,  
June 26-30, 2000.

Faculty, workshop on Palliative care  
conducted by PSG College of Nurs-  
ing Coimbatore, November 2000.

Faculty, Dr. F. Joseph Memorial CME  
on Palliative Care, October 2000

Faculty, Advanced International Work-  
shop on Pain and Palliative Care,  
Trivandrum, June 2000

Faculty, IAPC conference, Pain and  
Palliative Care Society, Bhopal,  
February 2001.

Faculty, CME in practical pediatric  
oncology, Kasturba Medical College,  
Mangalore, 13-14 August 2000.

Faculty, CME in Practical Paediatric  
Oncology, Regional Cancer Centre,

Thiruvananthapuram, 18-19 November 2000.

Faculty, Dr. F. Joseph Memorial CME on Palliative Care, RCC, Trivandrum, October, 2000.

Faculty, Advanced International workshop on Pain Conducted by Hopkins University, Trivandrum, June, 2000.

1st SIOP Asia Congress at Singapore, 25-29 April 2000.

Dr. Mallika Bafakrishnan  
Lecturer in Anaesthesiology

CME (MAC) in Anaesthesiology organized by Medical College, Trivandrum, March 2001.

Dr. Manjula  
RMO

Workshop on Training of trainers for health professionals, Bangalore, November 2000.

Dr. Manoj Pandey  
Asst. Professor in Surgical Oncology

Guest Lecture, CME, Kerala Chapter of ASI, Trichur, September 2000.

Guest Lecture, ICEDOC Jodhpur, 28-30 October 2000.

Guest Lecture, CME of Kerala Chapter of ASI, Trivandrum, 2-3 December, 2000.

Guest Lecture, Watch 2000, New Delhi, 4-8 December, 2000.

Maya

20th Annual convention of Indian Association for Cancer Research, Ahmedabad, 19-21 January 2001.

Dr. Namrata Dhakad  
Asst. Professor in Surgical Oncology

Workshop on Early detection of dysplasia, colposcopy and its treatment, funded by Bill Gates Foundation and IARC, Bhagwan Das Mahavir Hospital, Jaipur, March 2001.

Dr. Nileena Nayak  
Asst. Professor in Cytopathology

CME on Hematology update, Medical College, Kottayam, 2000.

IAPM Korala Chapter, Alleppey, October, 2000

Dr. V. Padmanabhan  
Professor in Radiation Physics

Invited talk, 7th Annual Meeting of AMPI (Tamil Nadu and Pondyichery chapter), GVN Cancer centre, Trichy, 8 July 2000

Invited talk, Oncology Nursing and quality care, RCC, Trivandrum, 22 August 2000.

Invited talk, AMPI XXI conference on Medical Physics at KMIO, Bangalore, 9-11 November 2000.

Invited talk, IMFT-Dr. Kuruvita Memorial oration AROI (Kerala chapter), RCC, Trivandrum, 3 December 2000.

Dr. Paul Augustine  
Lecturer in Surgical Oncology

Workshop of Endoscopic procedure, Coimbatore, May 2000.

Indo-American Conference and Endoscopic Workshop on Hepatobiliary diseases and liver transplantation, Amrita Institute of Medical Sciences and Research Centre, Kochi, January 2001.

Invited lecture, Advanced International workshop on pain sponsored by John/Es Hopkins University, Trivandrum, June 2000.

Guest lecture, Prof. F. Joseph Memorial CME on Palliative care, Trivandrum, October 2000.

Guest lecture, CME by ASI, Trivandrum, December 2000.

Dr. Prabha Balaram  
Addl. Professor in  
Cancer Research

Workshop of colposcopy and LEEP procedure in control of cervical cancer, sponsored by IARC, Calcutta, January 2001.

Invited participant, Education in Kerala's Development - towards a new agenda: State Level Workshop Series National Conference, Kochi, November 5, 2000 and Thiruvananthapuram, 27-28 December 2000.

20th Annual convention of Indian Association for Cancer Research, Ahmedabad, 19-21 January 2001.

Dr. Priyakumari T.  
Asst. Professor in Paed.  
Oncology

Paediatric Cancer Registry Training Programme, Emory University, Atlanta, Georgia, USA, 13-14, March 2000.

Observership in Paediatric Oncology Unit Aflac Cancer Centre, Egleston Childrens Hospital, Childrens Health Care of Atlanta, Emory University, March 15 - April 12, 2000.

CME in Practical Paediatric Oncology, Regional Cancer Centre, Thiruvananthapuram, 18-19, November 2000.

Dr. Rachel Cherian Koshy  
Professor in Anaesthesiology

Guest Lecture, Trivandrum City Branch meeting of Indian Society of Anesthesiologists 19 May 2000.

Organising Secretary and faculty for Advanced International workshop in Cancer pain management and Palliative care, RCC, Trivandrum, 19-23 June 2000.

44th Annual Kerala State Conference of Indian Medical Association,

Dr. Radhakrishna Pillai M  
Asso. Professor in Laboratory  
Medicine & Tumour Biology

Trivandrum. 11-12 November 2000.

Guest lecture, Oncology Nursing Update, RCC, Trivandrum Aug. 8 and 23, 2000.

Guest lecture, Dr. F Joseph memorial CME, RCCTrивandrum, 29 October 2000.

CME in Anaesthesiology (MAC) conducted by Department of Anaesthesiology, Medical College, Trivandrum, March 2001.

Invited lecture, CME on Apoptosis, Association of Pharmacologists and Physiologists of India, Medical College Hospital, Thiruvananthapuram, India 2000.

Invited lecture, Symposium on Biotechnology, University of Cochin, India 2000.

Invited lecture, 20th Annual Convention of Indian Association for Cancer Research, Gujarat Cancer & Research Institute, Ahmedabad, India 2001.

Dr. K Ramachandran  
Professor in Imageology

Faculty, CME on mid facial injuries, Department of oral and maxillofacial surgery, Dental College, Trivandrum, 2000

Faculty, CME organized by Kerala chapter of Association of Radiation Oncologists, Trivandrum, 3 June 2000.

Faculty, CME organized by Trivandrum branch of Indian medical association, 11 August 2000.



Mr.P RaghuKumar.  
Lecturer In Radiation Physics

Dr. Raghu Ram K. Nair  
Professor in Radiation Physics

Dr. B Rajan  
Professor of Radiotherapy &  
Addl. Director

Dr. Ramani S. Wesley  
Assoc. Professor of Community

Faculty, Oncological nursing update  
and and quality care, RCC,  
Trivandrum August 2000.

Faculty, CME organized by the  
association of surgeons of India,  
Kerala chapter, Trichur, September  
2000.

Faculty, CME under the auspices of  
medical oncologists of Kerala,  
Calicut, October 2000.

54th annual congress of IR and IA,  
Manipal, January 2001.

Micro Selectron HDR in the treatment  
of CaCx-RCC experience, KAMP  
meeting, Ernakulam, 15 October  
2000.

5th International Congress on High  
levels of Natural Radiation Assoc.  
and Radon areas, Munich, Germany  
4-7 September 2000.

5th Main meeting of the Early Breast  
Cancer Trialist's collaborative group  
Oxford, UK, 21-23 September 2000.

2nd European Breast Cancer  
Conference, Brussels, September  
2000.

AROI Conference, Jaipur, 2001.

Faculty in training West African  
Gynaecologists, Nurses and Health  
workers, International School of  
Colposcopy organized by IARC,  
Guinea, Conarky, Oncology 12-16  
June 2000.

Dr. Ravindran Ankathil  
Assoc. Professor of Cancer  
Research

Dr. Remani P  
Asst. Professor of Cancer  
Research

Guest speaker, on low cost cervical  
cancer detection methodologies,  
conducted by the division of  
Descriptive Epidemiology, IARC,  
June 7-10, 2000.

Faculty, WHO workshop on oncology  
training for nurses, Regional Cancer  
Centre, Trivandrum, 2 August, 2000.

Course Director and Faculty in  
training East African Gynaecologists,  
nurses and healthworkers,  
Kakkamega, Kenya and Nairobi,  
organised by PATH, August 23rd-  
September 5th 2000.

51st Annual meeting of the Japanese  
society for chromosome Research,  
Yokohama, Japan, October 12-14,  
2000.

13th Kerala Science Congress,  
Thrissur, January 2001.

26th Annual conference of Indian  
society of Human Genetics, CCMB,  
Hyderabad, 20-22 February 2001.

5th ADNAT convention and  
symposium on perspectives in  
Genome analysis, CCMB,  
Hyderabad, 23-24 February 2001

8th International Congress of  
Hyperthermic Oncology. Kyong-ju,  
Korea, 25-29 April 2000.

National seminar on phytochemicals  
and nutrition, Trivandrum, 8 January  
2001.

Mr.B.Saju  
Radiation Physics

13th Korala Science Congress,  
Thrissur, January 2001.

Quality assurance in HDR at KAMP  
meeting, Emakulam, 15 October  
2000.

Symposium on statistical and math-  
ematical techniques and radiation  
safety in Nuclear Medicine, AIIMS,  
NewDelhi, Feb 2001.

Dr. Shaji Thomas  
Asst. Professor in Surgical  
Oncology

Masters Course in Head and Neck  
Surgery. Tata Memorial Hospital,  
Mumbai, November 2000.

Biennial Conference ISOCON,  
Hyderabad, November 2000.

State Conference of Association of  
Plastic Surgeons of India, Kochi,  
March 2001.

Dr. A. Sreekumar  
Asst. Professor in Nuclear  
Medicine

Western Chapter Nuclear Medicine  
Conference & CME, Hinduja  
Hospital, Medicine Mumbai, May  
2000.

CME on New Advance in cancer  
treatment, Mumbai June 2000.

Ms.Swapna Alex

20th Annual convention of Indian  
Association for Cancer Research,  
Ahmedabad, 19-21 January 2001.

Dr.Thara Somanathan  
Asst. Professor in  
Cytopathology

Kerala State Chapter Meeting, IAPM  
at SCTIMST, TVM. June 2000.

IAPM Kerala State Chapter Meeting  
TD Medical College, Alappuzha,  
2000.

Dr. A. Venugopal  
Lecturer in Anaesthesiology

30th Annual Conference of Indian  
Academy of Cytologists, Nagpur,  
November 2000.

National CME on Challenges in Sur-  
gical Pathology, Thirunelveli Medical  
College, July 2000.

Workshop on Colposcopy and Leep  
at BMCHRC, Jaipur, sponsored by  
IARC, March 2001.

IMA Megafest, November 2000.

Anaesthesiology one day CME MAC  
2001 organised by Trivandrum  
Medical College Dept. of  
Anaesthesia, March 2001.

Dr. M. Venugopal  
Lecturer in Imageology

Guest lecture, CME Programme  
conducted by IRFA Kerala State  
Branch, Achuthamenon Centre,  
Trivandrum, 1st October 2000.

Guest lecture, CME programme  
organized by Orthopaedic  
Association, Medical College,  
Trivandrum, 25 February 2001.

Guest lecture, CME programme or-  
ganized by Nursing Division of RCC  
sponsored by DGHS, 25 March 2001.

Dr. V.Vishnu  
Library Assistant

7th National Seminar of the Indian  
Association of Teachers of Library &  
Information Services, Trivandrum, 7-  
9 February 2001.

**PAPERS PRESENTED IN  
CONFERENCES, SEMINARS, WORKSHOPS ETC.**

1. Aleyamma Mathew, Ulrike Peters, Wong-Ho Chow, Nathaniel Rothman, Rashmi Sinha. Role of diet and colorectal adenoma risk. American Association for Cancer Research, New Orleans, U.S. 2001.
2. Anitha Mathews. Malignant Myoepithelioma (Myoepithelial Carcinoma) Breast, IAPM, Alleppey, 2000.
3. Anitha Mathews. Myocutaneous flap in the intra oral milieu natural history of the cutaneous component. Indian Society of Oncology; Hyderabad, 2000. (Received Best Paper award).
4. Beenakumari N. Assessment of pain and other symptoms & Psychosocial problems of cancer patients. Workshop conducted by PSG College of Nursing, Coimbatore, November, 2000.
5. Bipin T Varghese. Nasolabial Flaps in Oral Reconstruction, IX Biennial National Conference of the Indian Society of Oncology, Apollo Hospital, Hyderabad 9<sup>th</sup> 12 November 2000.
6. Chandrakumaran Nair M. CanlibNet India: national network for sharing of oncology information resources in Cancer libraries in India, 8th International Congress on Medical Librarianship, London, 2-5, 2000.
7. Chandratekha B. Diagnostic slide. 30th Annual Conference of IAC November 2000.
8. Cherian Varghese, S Pillai, Krishnan Nair M. Organisation of cancer detection services in the Government health sector: The Kerala model. APOCP Founding Conference, Pattaya, Thailand, November 2000.
9. Cherian Varghese, Sreedevi Amma N, Julion Peto, Deacon J, Kalavathy MC, Krishnan Nair M. Prevalence of inflammation and HPV infection in the genital tract in a general population in Kerala, India. Global Challenge of Cervical Cancer Prevention: EUROGIN. 5-9 April, Paris 2000.

10. Cherian Varghese, Sreedevi Amma N, Kalavathy MC, Krishnan Nair M. Organised Population Based Cervical Cancer Screening Programme in Low Resource Settings: The Trivandrum Experience. 22nd, Annual Meeting of the International Association of Cancer Registries, Khon Khaen, Thailand, November 2000.
11. Cherian Varghese. HPV and Uterine Cervical Neoplasia. 23rd All Kerala Conference on Obstetrics and Gynaecology, Trivandrum, February 2001.
12. Chitrathara K. Advances in the surgical management of ovarian cancer. CME, Kerala Medical Oncology Association, Ernakulam, 2001.
13. Chitrathara K. Management of urinary symptoms. Seminar on Palliative Care, Trivandrum 2000.
14. Chitrathara K. Radical surgery in Carcinoma prostate. Overview of prostate cancer symposium. National surgical update, Trivandrum, 2000.
15. Chitrathara K. Surgical management of ovarian cancer. Kerala Medical Oncology association CME, Calicut 2000.
16. Elizabeth K. Abraham. Diagnostic Measures Cytological and Histopathological. Oncology Nursing Update sponsored by DGHS, Govt. of India, RCC, Trivandrum, August, 2000.
17. Elizabeth K. Abraham. Estrogen and Progesterone Receptor assay in women with breast cancer in the Indian subcontinent Is there ethnical variation? 2nd European Breast Cancer Conference Brussels, Belgium, September 2000.
18. Elizabeth M. Iype. Giant cell tumour of the hyoid bone-a case report. The State Annual Conference of AOI, Kochi, May 2000.
19. Elsamma Joseph. Fungating wound care and Ryle's tube feeding. Advanced International Workshop on Pain and Palliative Care sponsored under the auspices of Johns Hopkins University, ACC, Trivandrum 19- 23 June 2000.
20. Francis V James. Prostate cancer. National surgical update, Trivandrum, July 2000.
21. Francis V James. Radiotherapy in palliative care. Prof Joseph memorial CME on palliative care, October 2000.

23. Firoz R. Penile Carcinoma: A retrospective analysis of 111 cases, 9th Biennial conference of ISOCON, November 2000.
24. Gangadharan P, Jayalekshmi P, Mani KS, Krishnan Nair M, Raghu Ram K Nair. Comparative study of Cancer Incidence in high, medium and low level radiation Area - Study in Kerala. National Seminar on Atomic Energy, Ecology and Environment, Thiruchirappally, February 2001.
25. Gangadharan P, Jayalekshmi P, Mani KS, Krishnan Nair M. Incidence of Cancer in Kerala, Swadeshi Science Congress, Kochi, 2000.
26. Gangadharan P, Krishnan Nair M, Jayalekshmi P, Raghu Ram K Nair. Cancer Morbidity and Mortality in a High Natural Radiation Area in Kerala, India. 5th International Conference on High Level of Natural Radiation and Radon Areas, Munich, Germany, September 2000.
27. Jayalekshmi P, Gangadharan P, Mani KS and Krishnan Nair M. Incidence of Cancer in Karunagappally. Swadeshi Science Congress, Kochi, 2000.
28. Jem Prabhakar. Photodynamic therapy in Head and Neck Cancer. 9th Biennial National Conference, of ISO Memorial Oration RCC, Trivandrum.
29. Kumari Thankom. Bereavement and Communication, International Conference on Palliative care, Pain and Palliative- Care Society, Bhopal, February 2001.
30. Kumari Thankom. Grief and Bereavement, Lymphoedema, Introducing Palliative Care. Advanced International Workshop on Pain and Palliative Care sponsored under the auspices of Johns Hopkins University, RCC, Trivandrum 19- 23 June 2000.
31. Kumari Thankom. Introducing palliative care, care of lymphedema and assessment of pain and other symptoms. Dr. F. Joseph Memorial Day on Palliative care, 29 October 2000.
32. Kusuma Kumary P. Rhabdomyosarcoma in children. 1st SIOP Asia Congress, Singapore 25-29 April 2000.
33. Latha PT. Psychosocial aspects of cancer patients. Advanced International Workshop on Pain, R.C.C, Trivandrum 19-23 June 2000.

34. Mary Thomas. Gastro Intestinal Complications in Palliative Care. Prof. F. Joseph Memorial CME on Palliative Care, Trivandrum, 29 October 2000.
35. Mary Thomas. Gastrointestinal problems in palliative care. Advanced International Workshop on Pain, R.C.C, Trivandrum, 19-23 June 2000.
36. Mary Thomas. Use of propofol for oral cancer surgery. 9th Biennial National Conference of Indian Society of Oncology, November 2000.
37. Manoj Pandey, Krishnan Nair M. Biological response modifiers in cancer. UPAPICON 2000, Saharanpur 2000.
38. Manoj Pandey, Krishnan Nair M. Oncology: Future and Past trends. UPAPICON 2000, Saharanpur 2000.
39. Manoj Pandey. Neck dissections. Kerala Chapter of ASI, Trivandrum, 2000.
40. Manoj Pandey. Surgical management of malignant melanoma. CME of Kerala Chapter ASI, Trichur, 2000.
41. Namrata Dhakad. Malignant melanoma of vagina: reappraisal. 9th Biennial National Conference of Indian Society of Oncology, Hyderabad, November 2000.
42. Nileena Nayak. Diagnostic problems in leukemias and application of histochemistry. Hematology Update, Medical College, Kollayam, December 2000.
43. Padmanabhan V. Nurses and radiation protection in Oncology Nursing and quality care at RCC, Trivandrum on 22 Aug. 2000.
44. Padmanabhan V. Radiotherapy, past present and future in AMPI XXI conference on Medical Physics at KMIO, Bangalore on 9-11 Nov. 2000.
45. Paul Augustine. Breast Sarcoma in Retrospective Analysis. 4th Annual Conference of Breast Cancer Foundation of India, Bangalore 8-10 March 2000.
46. Paul Sebastian. Pathophysiology of pain. Advanced International workshop on pain sponsored by Johns Hopkins University at Trivandrum, June 2000.
47. Priyakumary T. Procedures in Paediatric Oncology and venous access devices, National training project. Practical Paediatric Oncology

CME, Regional Cancer Centre, Thiruvananthapuram, 10 November 2000.

48. Raghu Kumar P. Our experiences with micro selectron HDR in the treatment of CaCx at KAMP meeting, Ernakulam on 15 October 2000.
49. Raghu Ram K Nair, Santhosh VS, Jayadevan S, Gangadharan P, Jayalekshmi P, Krishnan Nair M. Distribution of <sup>238</sup>U, <sup>232</sup>Th, <sup>40</sup>K in the Soils of Karunagappally Taluk - A High Background Radiation Area in Kerala, India. 5th International Conference on High level of Natural Radiation and Radon Areas, Munich, Germany, 4 to 7 Sept, 2000.
50. Radhakrishna Pillai M. The patho-physiology of programmed cell death. CME on Apoptosis. Association of pharmacologists and physiologists of India, Medical college hospital, Trivandrum, 2000.
51. Radhakrishna Pillai M. Human papilloma virus, cervical cancer and development of vaccines. Symposium on Biotechnology, University of Cochin, 2000.
52. Rajan B, Aleyamma Mathew, Manoj Pandey. Treatment results of young patients (age < 40 yrs) with early breast cancer. 2nd European Breast Cancer Conference, Brussels, September 2000.
53. Ramachandran K. Breast Imaging in Medical Oncology, CME under the auspices of Medical Oncologists of Kerala, IMA Academy of Medical specialties, Calcutt, 29 October 2000.
54. Ramachandran K. Diagnostic measures, Radiological in Oncological Nursing update, 2nd August 2000 and Oncology Nursing and quality care, sponsored by DGHS and Nursing division RCC, Trivandrum, 17 August 2000.
55. Ramachandran K. Imaging of Breast. CME organized by the Association of Surgeons of India, Kerala Chapter and Dept. of Surgery, Medical College, Trichur 23-24 September 2000.
56. Ramachandran K. Langerhans cells Histiocytosis - a study of the Radiological features in 72 children during a 15-year period in the RCC, Trivandrum. 54th Annual congress of IR & IA, Manipal, 5-8 January 2001.
57. Ramachandran K. Present day imaging, CME organized by

Trivandrum branch of Indian Medical Association, Trivandrum, 11 August 2000.

58. Ramachandran K. Present role of plain X-rays in the diagnosis of diseases - Kodak Radiographer Orientation programme, Priyadarshini Planatorium, Trivandrum, 25 February 2001.
59. Ramachandran K. Ultrasonography in Clinical Practice - IMA, Nedumangad branch, 18 November 2000.
60. Ramachandran K. Imaging in mild facial trauma. CME on mild facial injuries, organized by the Dept. of Oral and Maxillo facial surgery, Govt. Dental College, Trivandrum, 14 May 2000.
61. Ramachandran K. Radiological approach to bone tumours, CME organized by Kerala chapter of Association of Radiation Oncologists, Trivandrum 3 June 2000.
62. Saju B. Quality assurance in HDR at KAMP meeting, Ernakulam 15 October 2000.
63. Venugopal M. Radiological approach to bone tumors, CME by IRIA Kerala state branch, Radiologyclub, Trivandrum and SCTIMST, Trivandrum October 2000.
64. Venugopal M. Imaging characteristics of bone tumors, CME by orthopaedic association, Medical College, Trivandrum, February 2001.
65. Vijaya P. Nursing standards at the DGHS aided training programme on Updates on Managerial skill in Critical Care Nursing for Staff Nurses from Government hospitals of Kerala at SCTMIST, Aug. 2000.
66. Vijaya P. Nursing Administration at the DGHS aided workshop on Management techniques for nurses managers from Government hospitals of Kerala at College of Nursing, Trivandrum, March 2001.

## PUBLICATIONS

1. Ankathil R. Gene therapy strategies for Cancer. In Pandey M, Nair MK, Sebastian P (Eds). *Important Advances in Oncology*. Jaypee Brothers Medical Publishers, New Delhi, India PP 2000: 130-145.
2. Ankathil R. The Human Genome Project: Current and Future Impact on Health Scenario. *Kerala Med J*. 2000; 41: 7-14.
3. Balaram P, John M, Alex S, Rajalekshmi TN, Nair MK. Increased expression of Interleukin -1 Beta is associated with persistence of the disease and invasion in complete hydatidiform moles (CHM). *Eur J Gyn Oncol* 2001; 12:50-57.
4. Chandramohan K, Pandey M, Chitrathara G. Testicular Tumours. *Kerala Surgical J* 2000; 7: 11-24.
5. Chandramohan K, Pandey M. Xanthogranulomatous pyelonephritis. *Kerala Surgical J* 2000; 7: 46-47.
6. Chandramohan K, Thomas S. Mandibular Reconstruction. *Kerala Surgical Journal*, 2000; 7.
7. Chitrathara K, Gangadharan VP, Pushpangathan PS. Renal Cell Carcinoma 10 years experience. *J Medical Sciences* 2000; 3 (2): 99.
8. Chitrathara K, Namralha D, Francis V, Gangadharan VP. Spontaneous rectovaginal fistula and repair using bulbocavernosus muscle flap. *Tech Coloproctol* 2001; 5:47-49.
9. Chitrathara K. Surgery in invasive carcinoma cervix. *Asian J Obstet Gynecol Practice* 2001; 5: 22.
10. Dhakad N. Epithelial ovarian cancer: Prognostic factors Review article. *J Obstet Gynaecol India* 2001; 51: 29-33.
11. Elias TS, Nair MK, Davis CA, Padmanabhan V, Subramanyam GV. India puts science into practice in Hitech Radiotherapy. *Austral-Asian J. Cancer* 2000; 1: 81-85.
12. Gangadharan VP, Ramachandran K, Elizabeth SK, Preetha S, Chitrathara K, Abraham EK. Primary osteosarcoma of metatarsal bone: *Am J Clin Oncol (CCT)* 2000; 23 (4): 429.
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14. Geetha N, Ramachandran K, Hussain BM, Nair MK. Non-Hodgkin's lymphoma relapsing as intramedullary spinal cord metastasis. *JK Practitioner* 2000; 7:62-63.
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## ENGINEERING SECTION

The Operation Theatre Block was completed. Canteen was shifted to the place earmarked in the Ground Floor. The civil work for the new cobalt unit is expected to be completed shortly. 30 Nos. semi paywards facilities for International School of Colposcopy in the Community Oncology Division were completed. The civil works for the Morphine Manufacturing Unit for RCC has been completed in the Pharmacy wing of Medical College, Trivandrum. The new Ultrasound room for thyroid scanning was completed. Additional facilities were given to the Blood Bank and Clinical Lab for improving blood donor facilities and blood collection facilities. 1No. 120 Ton Reciprocating Chiller for the Central Airconditioning System was replaced and commissioned in place of the old and damaged 200Ton Chiller.

## ADMINISTRATION

### MEMBERS OF THE GOVERNING BODY OF THE REGIONAL CANCER CENTRE SOCIETY

- |  |                                       |
|--|---------------------------------------|
| 1. Sri E.K.Nayanar<br>Hon'ble Chief Minister of Kerala   | Chairman                              |
| 2. Sri V C Kabeer<br>Hon'ble Minister for Health, Govt. of Kerala  | Vice-Chairman                         |
| 3. Sri. V.Vijayachandran, IAS<br>Principal Secretary to Govt.,<br>Health & Family Welfare, Govt. of Kerala | Alt. Vice-Chairman<br>(till Sept. 00) |

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|-----|--|--------------------------------------|
| 4.  | Sri. Rajeev Sadanandan, IAS<br>Principal Secretary to Govt.,<br>Health & Family Welfare, Govt. of Kerala | Alt. Vice-Chairman<br>(from Oct. 00) |
| 5.  | Sri Vinod Rai, IAS<br>Principal Secretary to Govt.<br>Finance Department, Govt. of Kerala                | Member                               |
| 6.  | Sri K.N. Kurup<br>Secretary to Govt.<br>Planning Dept., Govt. of Kerala                                  | -do-                                 |
| 7.  | Dr. M.S. Subhadra<br>Director of Medical Education, Trivandrum   | -do-                                 |
| 8.  | Dr. V.G. Chellam<br>Principal, Medical College,<br>Thiruvananthapuram                                    | -do-                                 |
| 9.  | Dr. M.R. Das<br>Director<br>Rajeev Gandhi Centre for Bio-Technology,<br>Trivandrum                       | -do-                                 |
| 10. | Dr. M.S. Valiathan<br>Hony. Advisor, Manipal Academy of<br>Higher Education, Manipal                     | -do-                                 |
| 11. | Dr. S.C. Gupta<br>Rtd. Director, VSSC, Thiruvananthapuram  | -do-                                 |
| 12. | Dr. S.P. Agarwal<br>Director General of Health Services,<br>Govt. of India nominee                       | -do-                                 |
| 13. | Sri. G.R. Patwardhan<br>Addl. Secretary, Health & Family Welfare,<br>Govt. of India, nominee             | -do-                                 |
| 14. | Dr. M. Krishnan Nair<br>Director, RCC, Trivandrum.   | Convener.                            |

#### MEMBERS OF THE EXECUTIVE COMMITTEE OF THE REGIONAL CANCER CENTRE SOCIETY

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|----|---|-----------------------------|
| 1. | Sri. V. Vijayachandran, IAS<br>Principal Secretary to Govt., H&FWD,<br>Govt. of Kerala      | Chairman-<br>til Sept. 2000 |
| 2. | Sri. Rajeev Sadanandan, IAS<br>Principal Secretary to Govt., H&FWD,<br>Govt. of Kerala      | Chairman<br>from Oct. 2000  |
| 3. | Sri. Vinod Rai, IAS<br>Principal Secretary to Govt.<br>Finance Department, Govt. of Kerala. | Member                      |
| 4. | Sri. K.N. Kurup<br>Secretary to Govt. Planning Dept.,<br>Govt. of Kerala                    | -do-                        |
| 5. | Dr. M.S. Subhadra<br>Director of Medical Education,<br>Thiruvananthapuram                   | -do-                        |
| 6. | Dr. V.G. Chellam<br>Principal, Medical College,<br>Thiruvananthapuram                       | -do-                        |
| 7. | Dr. M. Krishnan Nair<br>Director, RCC, Thiruvananthapuram                                   | Convener                    |

#### LIST OF NON-ACADEMIC STAFF

- |                              |                               |
|------------------------------|-------------------------------|
| Prof Joseph A                | Academic Secretary (Honorary) |
| <b>Administrative Office</b> |                               |
| Dr. George Varughese         | Registrar                     |
| Sri. Prakash E K             | Controller of Finance         |
| Sri. Vidyasagar P K          | Administrative Officer        |

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|-----|--|--------------------------------------|
| 4.  | Sri. Rajeev Sadanandan, IAS<br>Principal Secretary to Govt.,<br>Health & Family Welfare, Govt. of Kerala | Alt. Vice-Chairman<br>(from Oct. 00) |
| 5.  | Sri Vinod Rai, IAS<br>Principal Secretary to Govt.<br>Finance Department, Govt. of Kerala                | Member                               |
| 6.  | Sri K.N.Kurup<br>Secretary to Govt.<br>Planning Dept., Govt. of Kerala                                   | -do-                                 |
| 7.  | Dr.M.S. Subhadra<br>Director of Medical Education, Trivandrum  | -do-                                 |
| 8.  | Dr. V.G. Chellam<br>Principal, Medical College,<br>Thiruvananthapuram                                    | -do-                                 |
| 9.  | Dr. M.R. Das<br>Director<br>Rajeev Gandhi Centre for Bio-Technology,<br>Trivandrum                       | -do-                                 |
| 10. | Dr. M.S.Valiathan<br>Hony. Advisor, Manipal Academy of<br>Higher Education, Manipal                      | -do-                                 |
| 11. | Dr. S.C. Gupta<br>Rtd. Director, VSSC, Thiruvananthapuram  | -do-                                 |
| 12. | Dr. S.P. Agarwal<br>Director General of Health Services,<br>Govt. of India nominee                       | -do-                                 |
| 13. | Sri. G.R. Patwardhan<br>Addl. Secretary, Health & Family Welfare,<br>Govt. of India, nominee             | -do-                                 |
| 14. | Dr.M.Krishnan Nair<br>Director, RCC, Trivandrum.   | Convener                             |

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|----|---|------------------------------|
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| 2. | Sri. Rajeev Sadanandan, IAS<br>Principal Secretary to Govt., H&FWD,<br>Govt. of Kerala      | Chairman<br>from Oct.2000    |
| 3. | Sri. Vinod Rai, IAS<br>Principal Secretary to Govt.<br>Finance Department, Govt. of Kerala. | Member                       |
| 4. | Sri. K.N. Kurup<br>Secretary to Govt. Planning Dept.,<br>Govt. of Kerala                    | -do-                         |
| 5. | Dr. M.S. Subhadra<br>Director of Medical Education,<br>Thiruvananthapuram                   | -do-                         |
| 6. | Dr. V.G. Chellam<br>Principal, Medical College,<br>Thiruvananthapuram                       | -do-                         |
| 7. | Dr.M. Krishnan Nair<br>Director, RCC, Thiruvananthapuram                                    | Convener                     |

#### LIST OF NON-ACADEMIC STAFF

- |                              |                               |
|------------------------------|-------------------------------|
| Prof Joseph A                | Academic Secretary (Honorary) |
| <b>Administrative Office</b> |                               |
| Dr. George Varughese         | Registrar                     |
| Sri. Prakash E K             | Controller of Finance         |
| Sri. Vidyasagar P K          | Administrative Officer        |



Sri. Rajendran R  
 Sri. Gnanaswaran G  
 Sri. Sasikumar S V  
 Smt. Beena N  
 Smt. Lalitha B  
 Office Assistants Sr. Grade (3)  
 Office Assistants (3)  
 Cashier Grade. I (1)  
 Jr. Personal Assistants (3)  
 Data Entry Operator (1)  
 Drivers (4)  
 Despatcher (1)  
 Sr. Helpers (12)  
 Helpers (3)  
**Directors Office**  
 Sri. Ramaswamy Iyer  
 Jr. Personal Assistant (1)  
 Despatcher (1)  
 Sr. Helper (1)  
 Engineering Wing  
 Sri. Gopalakrishnan K  
 Sri. Rajan A  
 Sri. Vijaya Kumar L  
 Supervisors (Electrical) Gr. I (4)  
 Electricians (3)  
 Electronic Technician (1)  
 Jr. Personal Assistant (1)  
 Helper (1)  
**Surgical Oncology**  
 Anaesthesia technician Gr. I (1)  
 Theatre Technician (1)  
 Sr. Helpers (2)

Finance Officer  
 Accounts Officer  
 Asst. Purchase Officer  
 Asst. Accounts Officer  
 Asst. Administrative Officer

Secretary To Director

Civil Engineer (Consultant)  
 Chief Maintenance Engineer  
 Maintenance Engineer

**Dental Wing**

Dental Hygienist (1)

**Clinical services and medical records**

Sri. Raveendran Nair R Administrative Officer (Clinical Service)  
 Sri. Rajasekharan Nair G Medical Records Officer  
 Sri. Surendran Nair V Assistant Public Relations Officer  
 Cashier Gr. I (1)  
 Cashier Cum Receptionist (1)  
 Clerks Gr. I (6)  
 Clerk (1)  
 Telephone operator-cum-receptionist (1)

**Epidemiology & clinical research**

Dr. Jayalekshmi P Scientific Assistant (Sociology)  
 Smt. Anita Nayar Social Investigator Gr. I  
 Clerks Gr. I (2)

**Blood Bank**

Sri. Meera Sahib P Sr. Scientific Asst.  
 Lab Technician (1)

**Cytopathology**

Cytotechnician Sr. Grade (1)  
 Lab Technicians Sr. Grade (5)

**Imageology**

Sri. Joe D/ECruz Technical Officer  
 Radiographers Sr. Grade (5)  
 Dark Room Assistant (1)

**Nuclear Medicine**

Smt. Sheela V Technical Officer  
 Radiographers Sr. Grade (2)  
 Radiographer (1)  
 R I A Technicians Gr. I (3)

**Radiation Physics**

Sri. Ramabhadran P Technical Officer

Radiographers Sr. Grade (15)  
Radiographers (6)  
Mould Room Techn. Sr. Grade (1)

#### **Cancer Research**

Smt. Bindu L Cytotechnologist

Lab Technician Sr. Grade (1)  
Sr. Animal House Keepers (2)

#### **Clinical Lab**

Smt. Gangadevi C Technical Officer

Lab Technicians Sr. Grade (4)  
Lab Technician (1)

#### **Pharmacy**

Sri. Sivasankara Pillai K Pharmacist

#### **Information Systems**

Sri. Neelakantan G Sr. Systems Analyst

Sri. Manoj G Jr. Systems Analyst

Data Entry Operators (2)

#### **Community Oncology**

Sri. Sreekumar C Social Investigator

#### **Library & Information Services**

Library Assistants (2)

Typist Gr. I (1)

#### **Security Services**

Sri. Vipinagopal P D Security Officer - Cum

Vigil Officer

Sri. Vijayan Nair S Sergeant Gr. I

Security Guards (18)

#### **ECDC Ernakulam**

Smt. Syamala Kumari B Cytopathologist

Cytotechnologists Sr. Grade (2)

Staff Nurse Gr. I (1)

Sr. Helpers (2)

#### **ECDC Palakkad**

Cytotechnologist (1)

Staff Nurse Gr. I (1)

Cytotechnician Sr. Grade (1)

Sr. Helpers (2)

#### **Nursing Services**

Sister Vijaya CNO & Assoc. Prof. Nursing

Smt. Graceamma Joseph Nursing Superintendent

Nursing Supervisors (2)

Dietitian (1)

Head Nurses (14)

Staff Nurses Gr. 1 (8)

Staff Nurses (159)

Figures in parenthesis represent the number of staff against each category.

The names of the staff listed in the various divisions are not strictly based on seniority.

#### **ACKNOWLEDGEMENTS**

Ministry of Health & Family Welfare, Government of India.

Department of Science and Technology, Government of India

Department of Health & Family Welfare Government of Kerala

Chief Secretary to Government of Kerala

Secretary, Health & Family Welfare, Kerala

Indian Council of Medical Research, New Delhi

World Health Organisation, Geneva, Switzerland

World Health Organisation, New Delhi.

International Union Against Cancer (UICC) Geneva, Switzerland.  
American Cancer Society, New York.  
National Cancer Institute, Bethesda, Maryland, USA.  
International Agency for Research on Cancer (IARC), Lyon, France  
Bhabha Atomic Research Centre, Bombay.  
Director General of Health Services, Government of India, New Delhi.  
Director, Sree Chitra Thirunal Institute of Medical Sciences & Technology, Trivandrum.  
Kerala State Committee on Science, Technology and Environment, Trivandrum.  
Director of Medical Education, Kerala.  
Director of Health Services, Government of Kerala, Trivandrum.  
Principal, Medical College, Trivandrum.  
Medical College Hospital, Trivandrum  
Sree Avittam Thirunal Hospital for Women and Children, Trivandrum  
Dental College, Trivandrum.  
Atomic Energy Commission, Government of India.  
Census Operations, Kerala  
Bureau of Economics and Statistics, Kerala  
University of Kerala  
M.G. University, Kerala  
Drugs Controller, Trivandrum  
College of Pharmaceutical Sciences, Trivandrum  
Kerala State Transport Development Finance Corporation Limited  
United Nations Population Fund,  
Electronic, Research & Development Centre of India, Trivandrum

## **ACCOUNTS 2000-2001**

**REGIONAL CANCER CENTRE SOCIETY,  
BALANCE SHEET**

PREVIOUS SCH YEAR	LIABILITIES	CURRENT YEAR	
		Rs.	Ps.
357606857.29	I CAPITAL FUND	382747852.29	
2039292.12	II SPECIFIC FUNDS	2052449.12	
24551315.00	UNUTILISED GRANTS	11301315.00	
1385657.95	STAFF WELFARE FUND	1378042.95	
37396976.10	CCL FUND	38436842.10	
627160.25	III ADV. RECEIVED FOR RESEARCH PROJECTS	931002.14	
21357713.49	IV SECURED LOANS	43788204.19	
	<u>CURRENT LIABILITIES AND PROVISIONS</u>		
15613719.17	V CURRENT LIABILITIES -OTHERS	20774681.46	
18808493.85	VI CREDITORS FOR GOODS SUPPLIED	18897196.85	
141377629.53	VII PROVISION FOR DEPRECIATION	159687087.53	
<b>620764814.75</b>	<b>TOTAL</b>	<b>679993673.53</b>	

Notes Forming Part Of Accounts

Place : Trivandrum  
DATE : 10/10/2001

CONTROLLER OF FINANCE  
DIRECTOR

**TRIVANDRUM (Reg.No567/81)  
AS ON 31ST MARCH, 2001**

PREVIOUS SCH YEAR	ASSETS	CURRENT YEAR	
		Rs.	Ps.
311281372.56	VII FIXED ASSETS	328637029.16	
10465470.06	VIII CAPITAL WORK-IN-PROGRESS	10465470.06	
45344819.00	IX INVESTMENTS	48767575.00	
	<u>CURRENT ASSETS AND LOANS AND ADVANCES</u>		
4987656.92	X CLOSING STOCK	6816983.76	
1878880.00	INTEREST ACCRUED	0.00	
3457815.52	XI ADVANCES TO PROJECTS	3724104.52	
9769463.72	XII ADVANCES - OTHERS	11919049.50	
5565602.00	XIII INVESTIGATION FEES RECEIVABLE	9017684.00	
362059.00	SECURITY DEPOSITS	377059.00	
884805.82	XIV BALANCE WITH BANKS	10820743.82	
111425.91	XV CASH IN HAND	575296.96	
8500000.00	GRANT IN TRANSIT	4750000.00	
218155444.24	XVI INCOME & EXPENDITURE A/C	244122677.85	
<b>620764814.75</b>	<b>TOTAL</b>	<b>679993673.63</b>	

Vide my Report of even date

"T.AJITH KUMAR.B.COM,ACA"  
CHARTERED ACCOUNTANT  
MEMBERSHIP NO.209348

**REGIONAL CANCER CENTRE SOCIETY,  
INCOME AND EXPENDITURE ACCOUNT**

PREVIOUS YEAR	SCH	EXPENDITURE	AMOUNT	
			Rs.	Ps.
2814714.97	A.	Opening Stock	4987656.92	
39375890.24	A.	Purchases	45829662.53	
57192933.88	B	Salaries and Allowances	71979665.33	
275793.00		Uniform and Liveries	452455.25	
274597.00	C	"Rent,Rates & Taxes"	218253.00	
941352.65	D	"Postage,Telephone&Telegrams"	1259175.32	
738569.40	E	Travelling Expenses	734677.00	
584090.85	F	Printing & Stationary	666630.80	
55038.00		Advertisement Charges	189378.50	
5534751.80	G	Electricity and Water Charges	6368039.00	
68830.00		Remuneration to Auditors	102479.00	
4093806.21	H	Repairs & Maintenance	5820946.44	
1097264.00	I	Service Contract Charges	1019913.00	
2488436.62		Interest & bank Charges	3766295.57	
3000.00		Training Expenses	5928.00	
121097.50		Conference/Seminar/Workshop	130456.00	
182593.00	J	Computer Expenses	189866.00	
7018.00		Books & Periodicals	5741.00	
45422.00		Landscaping & Gardening	70646.50	
1184487.00		Proportionate Share to NTR	1435705.00	
163540.00	K	Miscellaneous Expenses	166578.00	
18205066.00		Depreciation	18309458.00	
10545.00		Cancer Education Programme	113946.00	
<b>135458839.12</b>	<b>TOTAL</b>		<b>163823552.16</b>	

Notes Forming Part Of Accounts

Place : Trivandrum  
Date : 10/10/2001

**CONTROLLER OF FINANCE  
DIRECTOR**

**TRIVANDRUM(Reg.No567/81)"  
FORTHEYEAR ENDED 31st MARCH2001**

PREVIOUS YEAR	SCH	INCOME	AMOUNT	
			Rs.	Ps.
33691000.00		Grant-in-aid; Govt of Keraia	34625000.00	
0.00		Grant-in-aid; Govt of India	1359005.00	
47260174.36		Investigation Fees	67385624.00	
17042328.29		Sale of Medicines	26909295.50	
38188.00		Interest Income	364339.00	
156007.00	L.	Trainig Fees	428300.00	
636980.35	M	Miscellaneous Income	532263.65	
4987656.92		Closing Stock	6816983.76	
31648504.20		Excess of Expenditure over Income	25402741.25	
<b>135458839.12</b>	<b>TOTAL</b>		<b>163823552.16</b>	

Vide my Report of even date

**"TAJITH KUMAR.B.Com,ACA"  
CHARTERED ACCOUNTANT  
MEMBERSHIP NO.209348**

**REGIONAL CANCER CENTRE SOCIETY  
CANCER CARE FOR  
INCOME AND EXPENDITURE ACCOUNT**

PREVIOUS YEAR Rs. Ps	EXPENDITURE	CURRENT YEAR	
		Rs.	Ps.
84000.00	Salaries & Allowances	85000.00	
50500.00	Advt. & Publicity	34050.00	
53380.00	Fuel charge	27141.25	
16424.00	Maintenance & spare parts	5506.00	
2553614.00	Reimbursement to Patients	3717260.00	
5484.00	Miscellaneous Expenses	525.00	
8050.00	Insurance Charges	0.00	
680115.92	Excess of Income over Expenditure	0.00	
<b>3451567.92</b>	<b>TOTAL</b>	<b>3869482.25</b>	

Notes Forming Part of Accounts

Place : Trivandrum  
Date : 10/10/2001

CONTROLLER OF FINANCE  
DIRECTOR

**TRIVANDRUM(Reg.No567/81)  
LIFE SCHEME  
FOR THE YEAR ENDED 31st MARCH 2001.**

PREVIOUS YEAR Rs. Ps	INCOME	CURRENT YEAR	
		Rs.	Ps.
3451567.92	Intorest on FD&Investments	3304989.89	
0.00	Excess of Expenditure over income	564492.36	
<b>3451567.92</b>	<b>TOTAL</b>	<b>3869482.25</b>	

Vide my Report of even date

"T.AJITH KUMAR,B.Com,ACA"  
CHARTERED ACCOUNTANT  
MEMBERSHIP NO.209348



**SCHEDULE - VII**  
**"REGIONAL CANCER CENTRE SOCIETY**  
**SCHEDULE OF FIXED ASSETS**

ITEM	GROSS BLOCK		
	Cost or 1.4.00	Additions	Deduction: Cost on 31.3.2001
BUILDINGS, OLD	830110.25		330110.25
BUILDINGS	25643154.36	769723.00	29416877.08
BUILDINGS, RT	17094500.70		17094500.70
BUILDING PHASE II	79374913.99	1092899.00	80457612.39
BOUNDARY WALL	127118.63		127118.63
BUILDING - COBALT UNIT	0.00	975347.00	975347.00
WATER SUPPLY AND DRAINAGE	2029115.43	76003.00	2105115.43
FURNITURE AND FITTINGS	7851051.43	286939.00	8117020.43
OFFICE EQUIPMENT	1835008.43	87483.00	1922501.43
HOSPITAL & LAB EQUIPMENTS	92233371.47	11033587.50	103266938.97
ELECTRICAL INSTALLATION	38998064.90	10300.00	37068364.90
FIRE DETECTION	3841120.00		3841120.00
AIR CONDITIONING	15739104.35	850000.00	16589104.35
COMPUTER HARDWARE AND SOFTWARE	2794671.00	320529.00	3115200.00
GAS AND CYLINDER	6572362.05	26800.00	6599152.05
VEHICLES	480570.60	762581.00	1243151.60
LIBRARY BOOKS AND JOURNALS	5690863.27	1070378.10	6761346.37
LIFT AND ELEVATOR	5813240.00		5813240.00
ASSETS (DONATIONS)	337612.00		337612.00
TELEPHONE EQUIPMENTS	2857325.00	15270.00	2872595.00
<b>TOTAL</b>	<b>311281372.56</b>	<b>17365666.60</b>	<b>328637029.16</b>

**TRIVANDRUM (Reg. No. 567/81)"**  
**AS ON 31-03-2001**

ITEM	DEPRECIATION			NET BLOCK	
	Up to 31.3.00	Additions	Total upto 31.3.2001	As on 31.3.2001	As on 31.3.00
BUILDINGS, OLD	441817.95	20914.30	462732.55	397377.70	418232.30
BUILDINGS	11403706.84	900955.52	12334422.16	17112454.96	17244387.42
BUILDINGS, RT	5061224.69	601663.60	5662888.49	11431612.21	12033276.01
BUILDING PHASE II	14897894.00	3202465.85	17996379.85	62491233.14	64677019.99
BOUNDARY WALL	56428.89	3434.50	61863.38	85255.25	88689.75
BUILDING - COBALT UNIT	0.00		0.00	975347.00	
WATER SUPPLY AND DRAINAGE	1354946.63	112525.32	1467471.95	637643.48	674168.80
FURNITURE AND FITTINGS	3765476.36	435154.40	4200630.76	3918389.67	4085575.07
OFFICE EQUIPMENT	1066756.56	128511.79	1194268.29	728233.14	763251.87
HOSPITAL & LAB EQUIPMENTS	55059480.06	7232186.83	62285940.89	49883990.08	37182891.41
ELECTRICAL INSTALLATION	20638762.66	2455440.34	23094202.99	13914161.91	16359302.25
FIRE DETECTION	2061075.10	289556.74	2330331.84	1510488.16	1777044.90
AIR CONDITIONING	10966897.40	842986.00	11812883.40	4776240.95	4769166.95
COMPUTER HARDWARE AND SOFTWARE	2445588.60	267844.48	2713433.28	481768.72	349082.20
GAS AND CYLINDER	3482993.65	470423.76	3933417.41	2566734.64	3189358.40
VEHICLES	296482.56	189333.81	485816.37	757335.23	184088.04
LIBRARY BOOKS AND JOURNALS	3216340.25	531750.82	3748091.17	3012255.20	2474628.02
LIFT AND ELEVATOR	3546137.35	355215.40	3900352.75	2012687.25	2358102.65
ASSETS (DONATIONS)	234845.30	15415.00	250260.30	87351.70	102766.70
TELEPHONE EQUIPMENTS	1600514.70	190797.00	1791111.70	1051183.30	1255710.30
<b>TOTAL</b>	<b>141377629.53</b>	<b>18309458.00</b>	<b>159687087.53</b>	<b>168940941.63</b>	<b>169903743.03</b>

AJITH KUMAR.T.B.Com,ACA  
CHARTERED ACCOUNTANT

T.C.6/1012  
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### AUDITOR'S REPORT

I have examined the attached Balance Sheet of the REGIONAL CANCER CENTRE SOCIETY, Regn. No.567/81, Thiruvananthapuram as at 31st March, 2001 and the Income and Expenditure Account for the year ended on that date annexed thereto and report that:

1. The said Balance Sheet, Income and Expenditure account and the schedules thereon are in agreement with books of accounts maintained by the Society.
2. I have obtained all the information and explanation which to the best of my knowledge and belief were necessary for the purpose of my audit.
3. In my opinion, proper books of accounts have been maintained by the Society.
4. In my opinion and to the best of my information and according to the explanation given to me and

#### **subject to the following:**

- I. Internal control in respect of fixed assets, Stores and Engineering items are not commensurate with the size and magnitude of activities of the Society.
- II. Allocation of grant of Rs.401.25 Lakhs received from Government of Kerala between Capital and Revenue at Rs. 50 Lakhs and Rs. 346.25 Lakhs respectively and for Vaidya Balendu Rs.5 Lakhs which has been credited to the concerned account as referred to in Note.No-1.
- III. The land assigned by the State Government Vide GO/619/88/RD. dated. 28.7.1988, measuring 69 conts at Paighat and the building

constructed there on for which the Patta has not been received as referred to in Note-No.4

- IV. Land at Pulayanarkotta measuring 17 acres in Sy.No.2122 assigned by the Government of Kerala Vide Order No.GO/MS/1054/22/RD. dated 17.11.1982 has not been brought to the accounts for want of clear documents of Title as referred to in Note No.5
- V. Cancer care for life "SBT Staff SB A/C No.400328" is subject to reconciliation and confirmation and there is a reconciliation difference of Rs.67525/- as on 31.3.2001 between the Bankbook balance and PassBook balance as referred to in Note No.7.
- VI. Capital WIP for an amount of Rs.10465470/06 as on 31.3.2001 is the balance in the account brought forward from last year and carried as such as the same is pending proper adjustments in the accounts since the finalisation of the contractor's bill has not been completed as referred to in Note No.8.
- VII. During the year an amount of Rs.1,40,00,000/- has been transferred from unutilised grant to capital fund which is subject to audit as referred to in Note No.9.
- VIII. The investment and term deposit suspense account made against CCL fund account has not been reconciled as on 31.3.2001 as referred to in Note No.2 and;
  - i. The Balance Sheet read together with Notes thereon gives a true and fair view of the state of affairs of the Society as at 31st March, 2001 and ;
  - ii. The Income and Expenditure Account read together with Notes thereon give a true and fair view of the deficit of the Society for the year ended 31st March, 2001.

T.AJITH KUMAR. B.Com, ACA,  
CHARTERED ACCOUNTANT.  
Mem. No. 209348.  
Place: Thiruvananthapuram,  
Date: 10-10-2001.

## SCHEDULE

### NOTES FORMING PART OF ACCOUNTS

1. Out of the grant received from Government of Kerala during the financial year 2000-2001 amounting to Rs.401.25 Lakhs, an amount of Rs.50 Lakhs have been transferred to Capital Fund representing Fixed Assets acquired or constructed during the year and the balance of Rs.346.25 Lakhs excluding the grant for Rs.5 Lakhs for Vaidya Balendu, have been treated as Revenue and taken to Income and Expenditure Account.
2. The investment against Cancer Care for Life Fund Account has not been reconciled as on 31.3.2001.
3. An amount of Rs.3,50,000/- representing unidentified credit in the account with State Bank of Travancore brought forward from previous year, has been taken in to account by crediting Bank Suspense Account.
4. The land assigned by the State Government vide GO/619/88/RD, dated, 28.7.1988 measuring 69 cents at Palghat and the building constructed there, has not been brought to the accounts, since clear documents of Title has not been received.
5. The Land at Pulayanarkotta measuring 17 acres assigned by the Government of Kerala vide order No.GO(MS)No.1054/22/RD, dated: 17.11.1982 has not been brought to accounts, since the clear document of Title has not been received.
6. Claim made by the Executive Engineer, Special Building, PWD amounting to Rs.3,45,615/- deposit works, carried out for RCC, has not been acknowledged as debt and hence not provided for in the accounts.
7. Cancer care for life "SBT Staff SB A/C No.400328" is subject to reconciliation and confirmation and there is a reconciliation difference of Rs.87525/- as on 31.3.2001 between the Bankbook balance and PassBook balance.
8. Capital WIP for an amount of Rs.10465470/06 as on 31.3.2001 is the balance in the account brought forward from last year and carried as such as the same is pending proper adjustments in the

accounts since the finalisation of the contractor's bill has not been completed.

9. During the year an amount of Rs.14000000/- has been transferred from Unutilised Grant to Capital fund being the amount carried forward in the Account from the year 1997-98 onwards, pending adjustment.
10. Stationery is accounted on cash basis and no stock in hand is taken in the account as on 31st March, 2001.
11. The balance in party accounts are subject to confirmation.
12. Previous year figures have been re-grouped and re-cast wherever necessary to suit the current year's layout.

Vide my Report of even date.

CONTROLLER OF FINANCE  
DIRECTOR

T.AJITH KUMAR  
B.Com,ACA  
CHARTERED ACCOUNTANT  
Mem.No.209348.

Place: Trivandrum,  
Date:10/10/2001.

## SIGNIFICANT ACCOUNTING POLICIES

1. The Financial Statements are prepared on historic cost convention method.
2. Fixed Assets are accounted at cost; depreciation is provided at the rates as evaluated by the management and on written down value method. Full depreciation for the year is provided at in respect of additions.
3. Chemicals, medicines and consumable stores are valued at cost.
4. Grant from Governments are accounted, based on the sanction received.
5. Contributions in foreign currency are accounted on realisation basis.
6. Provident Fund is regularly contributed to the Employees Provident Fund and is deposited with Regional Employees Provident Fund Commissioner, Contributions towards gratuity is made through Group Gratuity Scheme of Life Insurance Corporation.

Vide my Report of even date.

CONTROLLER OF FINANCE  
DIRECTOR

**T.AJITH KUMAR**  
**B.Com,ACA**  
CHARTERED ACCOUNTANT  
Mem.No.209348.

Place:Trivandrum,  
Date:10/10/2001.

**AJITH KUMAR.T.B.Com, ACA**  
CHARTERED ACCOUNTANT

T.C. 6/1012  
Konathukulangara  
Vattiyookavu. P.O.  
Trivandrum - 695 013

Telephone : 362159, 926-45045  
E-mail: ajitht chartered @ rediff.com

## UTILISATION CERTIFICATE

Certified that an amount of Rs.75,00,000/- (Rupees seventy five lakhs only) has been utilised out of the following grants:-

Grant received during the financial year 2000-2001 vide letters:-	Amount Rs.
Dy.No.3056/JS(FA)2000 dated 27/06/2000	3500000.00
Dy.No.1347/JS(FA)2001 dated 07/03/2001	7,50,000.00
Dy.No.1821/JS(FA)2001 dated 25/03/2001	<u>40,00,000.00</u> 82,50,000.00
Add unutilised grant of the Year 1999-2000	<u>1,00,00,000.00</u> 1,82,50,000.00
Less:Unutilised grant carried to 2001-2002	1,07,50,000.00
<b>UTILISED GRANT DURING 2000-2001</b>	<b>75,00,000.00</b>

By REGIONAL CANCER CENTRE SOCIETY, THIRUVANANTHAPURAM during the year 2000-2001 for acquiring equipments and spare parts of equipments for the development of the society.

Place: Thiruvananthapuram  
Date: 10/10/2001

**T. AJITH KUMAR. B.Com, ACA**  
CHARTERED ACCOUNTANT  
MEMBERSHIP NO.209348

**AJITH KUMAR.T.B.Com, ACA**  
**CHARTERED ACCOUNTANT**

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E-mail: ajitht chartered @ rediff.com

### **UTILISATION CERTIFICATE**

Certified that the grant of Rs.4,01,25,000/- (Rupees four crores one lakh twenty five thousand only) received during the financial year 2000-2001 by the **REGIONAL CANCER CENTRE SOCIETY, THIRUVANANTHAPURAM** (Registration No. 567/81) from the Health and Family Welfare Department, Government of Kerala as per the Government Orders, have been utilised by the Society during the financial year 2000-2001 for the purpose of overall development and maintenance of the institution and other working expenses, implementation of projects, construction of building, functioning of Early Cancer Detection Centre and National Tumour Registry.

Place: Thiruvananthapuram  
Date: 10/10/2001

**T. AJITH KUMAR. B.Com, ACA**  
**CHARTERED ACCOUNTANT**  
**MEMBERSHIP NO.209348**