

**ANNUAL REPORT  
2007-2008**



**REGIONAL CANCER CENTRE**  
THIRUVANANTHAPURAM – 695011, KERALA, INDIA

## Regional Cancer Centre

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**ORGANISATION  
&  
SERVICES**

**GOVERNING BODY**



**EXECUTIVE COMMITTEE**



**DIRECTOR**



**ADMINISTRATION**

General Administration  
Finance

**SERVICES**

**CLINICAL**  
Radiation Oncology  
Surgical Oncology  
Medical Oncology  
Paediatric Oncology  
Anaesthesiology  
Radiation Physics  
Community Oncology  
Multidisciplinary Clinics

**DIAGNOSTIC**  
Cytopathology  
Imageology  
Nuclear Medicine  
Clinical Laboratory

**AFFILIATED UNITS**  
Nursing  
Pain & Palliative Care  
Blood Bank  
Pharmacy  
Medical Records  
Dental Care

**RESEARCH**

Basic Research  
Molecular Medicine,  
Drug Development and  
Chemo-informatics  
Epidemiology &  
Clinical Research

**Outreach Programmes**  
ECDC, Ernakulam  
ECDC, Palakkad  
NBRR, Karunagapally

Library & Information  
Services  
Information Systems

## GOVERNING BODY (2007-2008)

1. Sri.V.S.Achuthanandan Hon'ble Chief Minister of Kerala	Chairman
2. Smt. P.K.Sreemathy Teacher Hon'ble Minister for Health, Govt. of Kerala	Vice-Chairman
3. Dr.Vishwas Mehta, IAS Secretary to Govt., Health and Family Welfare Department Govt. of Kerala	Alt.Vice-Chairman
4. Sri.K.Jose Cyriac, IAS (Till 8.02.08) Principal Secretary to Government Finance Department, Govt. of Kerala	Member
5. Dr. L.C.Goyal, IAS Principal Secretary to Government Finance Department, Govt. of Kerala	Member
6. Dr. Alok Sheel, IAS (Till 30-06-2007) Secretary to Government Planning Department, Govt. of Kerala	Member
7. Dr.Teeka Ram Meena, IAS (From 10-07-2007) Secretary to Government Planning Department, Govt. of Kerala	Member
8. Dr.K.Mohandas Director, Sree Chithra Thirunal Institute for Medical Sciences and Technology, Thiruvananthapuram	Member
9. Director General of Health Services, Ministry of Health and Family Welfare, Govt. of India	Member
10. Secretary Ministry of Health and Family Welfare, Govt. of India	Member
11. Dr.S.C.Gupta 'Vaidya', Pulayanarkotta Road, Thiruvananthapuram	Member
12. Dr.Meenu Hariharan (Till 30-04-2007) Director of Medical Education, Thiruvananthapuram	Member
13. Dr. G. Sudayakumar (01-05-2007 to 31-10-2007) Director of Medical Education, Thiruvananthapuram	Member
14. Dr. P. V. Ramachandran (From 01-12-2007) Director of Medical Education, Thiruvananthapuram	Member
15. Dr.A.V.Remadevi (Till 30-11-2007) Principal, Medical College, Thiruvananthapuram	Member

16. Dr.K. Sallikumar (From 01-12-2007) Principal, Medical College, Thiruvananthapuram	Member
17. Dr.B.Rajan Director, Regional Cancer Centre	Convener

## Executive Committee (2007-2008)

1. Dr.Vishwas Mehta, IAS Secretary to Govt., Health and Family Welfare Department, Govt. of Kerala	Chairman
2. Sri.K.Jose Cyriac, IAS (Till 8.02.08) Principal Secretary to Government Finance Department, Govt. of Kerala	Member
3. Dr. L.C.Goyal, IAS Principal Secretary to Government Finance Department, Govt. of Kerala	Member
4. Dr. Alok Sheel, IAS (Till 30-06-2007) Secretary to Government, Planning Department, Govt. of Kerala	Member
5. Dr. Teeka Ram Meena, IAS (From 10-07-2007) Secretary to Government, Planning Department, Govt. of Kerala	Member
6. Dr. Meenu Hariharan (Till 30-04-2007) Director of Medical Education, Thiruvananthapuram	Member
7. Dr. G. Sudayakumar (01-05-2007 to 31-10-2007) Director of Medical Education, Thiruvananthapuram	Member
8. Dr. P. V. Ramachandran (From 01-12-2007) Director of Medical Education, Thiruvananthapuram	Member
9. Dr.A.V.Remadevi (Till 30-11-2007) Principal, Medical College, Thiruvananthapuram	Member
10. Dr.K. Sallikumar (From 01-12-2007) Principal, Medical College, Thiruvananthapuram	Member
11. Dr.B.Rajan Director, Regional Cancer Centre, Thiruvananthapuram	Convener

## OVERVIEW

Regional Cancer Centre, Trivandrum, having entered into its 27th year of existence, has added several stars to its crown of achievements during the report year. Being one of the leading RCCs in India, we continued to keep appreciable standards in comprehensive cancer care, prevention, control and research. Rapid progress could be seen in all our activities targeting the community at large. At par with the international standards and current trends in oncology, treatment protocols are being updated and we have been taking best possible care of the patients.

The year 2007-08 brought in remarkable improvements in the infrastructure facilities which the Centre has been giving major thrust. Clinical and diagnostic services have been further strengthened with the addition of new facilities. With the commissioning of a state-of-the-art Bone Marrow Transplant Unit, RCC has become the first institution in Government sector in the state and fourth among Indian states to offer such an advance facility to those suffering from Acute lymphoma, Leukemia and Multiple myeloma. The unit was opened by Smt. P.K.Sreemathy Teacher, Hon'ble Minister for Health on 6th October 2007. By this, a life saving procedure at reasonable expense could be delivered to the needy patients. We could claim the credit of being the first Centre in the country to offer bone marrow transplant at a very low and affordable cost. Diagnostic facilities at RCC were strengthened with the installation of Magnetic Resonance Imaging(MRI) scanner, a major project inaugurated by Dr.Anbumani Ramadoss, Hon'ble Minister for Health & Family Welfare, Govt. of India on 24th November 2007. Patients not only at the Centre but those referred from other hospitals also could avail the benefits of MRI at subsidised rates or at no cost. The X-ray units with C-arm facility and Digital Radiotherapy Simulator are other noteworthy additions to augment the infrastructure towards comprehensive cancer management. Initiatives were taken to enhance the blood bank facilities and for organizing a modern Microbiology laboratory as part of intensifying the clinical support services.

There has been an upsurge in academic and research activities during the year. The PG programmes - Diplomate of National Board, were running well in all the approved specialties. We also offered Fellowship opportunities in many specialties in oncology. From the very inception, RCC has been giving high priority to teaching, training and research that has earned due recognition at national and international levels. Several

clinical research projects were undertaken supported by national and external agencies. The results of many research activities both at basic and clinical level found place as scholarly articles in international journals. Currently 28 scholars are doing research leading to Ph.D. One of the field surveys led by RCC during the report year found that smoking and paan masala use were prevalent among government school students. Many such surveys provided us the data in formulating our future course of action in cancer control activities in the State. An ICMR funded study on genetic susceptibility of tobacco associated malignancies came up with evidence on metabolizing genes in the transformation of oral leukoplakia. Studies were also taken up in integrating cancer therapeutics with traditional ayurveda compounds and exploring its benefits. Clinical trials using ayurvedic mouth wash in patients undergoing radiotherapy for oral cancer provided us positive results in minimizing radiation toxicities.

Integration of cancer screening programmes with existing health care system as a whole has been another dynamic area the Centre has been focusing. Breast cancer has emerged as a major public health issue in the state which urged RCC to target its attention to this particular problem. Trivandrum Breast Cancer Screening Project, the collaborative project of Regional Cancer Centre and International Agency for Research on Cancer, France is progressing well. This programme is in line with the Trivandrum Oral Cancer Screening study which has demonstrated for the first time in the world the effectiveness of oral visual examination in reducing mortality from oral cancer. Benefiting the community at large, many of the RCC camps and awareness classes focused mainly on oral and breast cancers.

The Centre has been able to organize several training programmes and seminars during the year. World Palliative Care day was observed on October 6, 2008 with various programmes. Addressing the seminar, Shri. M. Vijayakumar, Hon'ble Minister for Law, emphasized the need for No-Tobacco Clubs to make the public aware of the menace of tobacco use. Another event was the Workshop on Oral premalignancies and cancer organized on 7th November 2008 in connection with the 'National Cancer Awareness Day'. On 6th October 2008, the 'World Palliative care Day', 'Santhwana Sandesa Yatra' a vehicle rally was organized by RCC Palliative Care Division with the support of many non-governmental and residents' associations. Several awareness meetings in selected locations were conducted all along the rally to spread the message of terminal care and pain relief. A telemedicine link for palliative

care between RCC and the Pain and Palliative care Centre at Adimali, Idukki, was also launched. This was the pilot project to provide tele-palliative care facilities of RCC to rural people. Community research projects covering large population groups both in urban and rural areas have been a notable feature of our outreach programmes. A variety of mass communication media were utilised. As detailed in the departmental activities, a series of cancer detection and screening programmes were conducted under Trivandrum Corporation Cancer Control (TCCP) and District Cancer Control Programme (DCCP) projects. In organizing such events and bringing more people under the umbrella of Centre's insurance scheme, Cancer Care for Life (CCL) we place on record our deep sense of gratitude to the residents' associations and various non-governmental organizations.

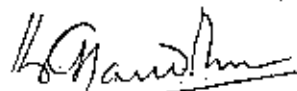
Philanthropic activities extended by RCC based voluntary agencies like Asraya, Prathyasa continued with some innovative projects. 'Fruit aid' project implemented through 'Care plus', an NGO in RCC, worked towards providing fresh carrot and citrus fruits with recuperative value free of cost to pediatric patients. 'Akshayapatram' the food project envisaged for the distribution of food four times a day for all patients below poverty line. RCC resources and funds raised from sponsorship were utilized for this welfare service. A free drug bank was also launched during the year mainly through sponsorship.

For RCC, the report year has special significance as the observations and reports made by the Petitions Committee of Kerala Legislative Assembly in June 2007 is expected to bring far reaching effects. As pointed out by the Committee, the non-availability of land for development has been a prime problem. In order to get the Deemed to be University status, the Centre's long felt need and to achieve the status of Centre of Excellence, the Committee stressed the need for more political lobbying from Members of Parliament from Kerala with Union Ministry. The report also stressed the need for more non plan funding, strengthening manpower and improvements in other infra-structure facilities. RCC, Trivandrum, in the course of its decades of service strives hard to set up a comprehensive cancer care facility with all the modern amenities. Many things are yet to be accomplished. It is worthwhile to note that patient registration has been significantly on the increase along with the corresponding increase in the review cases. This Centre is indeed one of the few institutes in public sector where nearly 50% of the patients receive free treatment and another 21% of the middle

income group get treatment at subsidised rates. Handling this situation with the available infrastructure, manpower and materials has been a real challenge.

We continued to get immense support and constant encouragement from Central and State governments, Governing Body and Executive Committee, without which all these achievements would not have been possible. In this connection, the devoted service rendered by the staff is well appreciated. Hope the development proposals and projects submitted to Central and State governments would materialise in the near future. We are dedicated to continue the triumphant march to fight against cancer.

I am very pleased to present this annual report which contains activities of various divisions and peripheral centres of RCC for the year 2007-08.



(Dr. K. Ramachandran)  
Director-in-charge

Director during the report year  
Dr. B. Rajan

## MULTISPECIALITY CLINICS AT RCC

Clinics	Specialities	Specialized Services
A. Hematological / Lymphoreticular malignancy & Sarcoma	Medical Oncology Radiation Oncology Surgical Oncology	High-dose chemotherapy, Peripheral Blood Stem cell Transplantation.
B. Head & Neck	Radiation Oncology Medical Oncology Surgical Oncology	External Radiotherapy-both photon & electron, Brachytherapy-both High Dose Rate(HDR) and Low Dose Rate (LDR) Concurrent chemoradiation.
C. Breast & Central Nervous System	Radiation Oncology Medical Oncology Surgical Oncology	Breast conservation Breast Reconstruction Adjuvant / Neoadjuvant treatments Support services.
D. Gynaec & Genitourinary	Radiation Oncology Surgical Oncology Medical Oncology	Brachytherapy - both HDR & LDR Gynaec Tumour Board & Genitourinary Tumour Board.
E. Chest & Gastro	Radiation Oncology Surgical Oncology Medical Oncology	Bronchoscopy, Oesophagoscopy, Colonoscopy, Colostomy care, Brachytherapy for Lung, Oesophagus, Bile duct & anus Gastro-tumour Board Concurrent chemoradiation.
F. Pediatric Oncology	Pediatric Oncology Radiation Oncology Surgical Oncology	Pediatric Tumour Board Aggressive chemotherapy for high risk Acute leukemias and Non Hodgkins Lymphomas.
G. Thyroid	Nuclear Medicine Surgical Oncology	Thyroid Scan and uptake, Ultrasonography in vitro assays, radioiodine therapy, radio nucleic therapy.

## DEPARTMENTAL ACTIVITIES

### RADIATION ONCOLOGY

Dr. B. Rajan	Professor & Director
Dr. P. G. Jayaprakash	Professor
Dr. S. Parameswaran	Professor
Dr. Suresh Chandra Dutt	Additional Professor
Dr. Jayaprakash Madhavan	Additional Professor
Dr. K. Ramadas	Additional Professor (On leave from 15-07-2007)
Dr. K. Ratheesan	Additional Professor
Dr. Francis V. James	Additional Professor
Dr. Thomas Koilparampil	Associate Professor
Dr. Beela Sarah Mathew	Associate Professor
Dr. Aswin Kumar	Assistant Professor (On leave from 22-08-2007)
Dr. C. D. Sivanandan	Assistant Professor
Dr. R. Rejnish Kumar	Assistant Professor
Dr. Susan Mathews	Lecturer
Dr. Sajeed A.	Lecturer
Dr. Asha Arjunan	Lecturer
Dr. Kainickal C. T.	Lecturer

Being the major division of the Centre, the Department is looking after the 4 major solid tumour clinics - B, C, D, E. The majority of patients come to this department at initial stage of their treatment. The division is empowered with 17 doctors from Lecturer to Professor level and half a dozen Post Graduates for the patients service. Patient registration has significantly increased in the recent past, including the review cases. This has resulted in substantial increase in the workload of the staff.

As part of academic programmes of the division, the staff continued to be fully involved in post graduate teaching, training, conduct of interdisciplinary patient review meetings, participation in national and international conferences/meetings, etc. Trivandrum Breast Cancer Screening Programme, the major collaborative project of Regional Cancer Centre and International Agency for Research on Cancer, France is progressing well. The first batch of DNB, Radiotherapy students



completed their programme during the report year. The doctors of the division were actively involved in the follow-up clinics at various outreach Centres of RCC.

There has been significant improvement in the clinical service also. The division could acquire a digital radiotherapy simulator during the period. In order to strengthen the timely delivery of radiotherapy care, steps have been initiated for the acquisition of more radiotherapy machines with state of the art technology to update all the modern amenities in radiotherapy.

### ONGOING RESEARCH PROJECTS

1. HBRA Project (Karunagappally): Cancer occurrence in the Natural Radiation Area of Kerala (Funded by: Health Research Foundation Kyoto)  
Principal Investigator: Dr. B. Rajan
2. Estimation of tobacco attributable mortality in Kerala, India (Funded by: International Agency for Research on Cancer, France)  
Principal Investigator: Dr. K. Ramadas
3. Randomised controlled trial of oral cancer screening by mouth examination in Kerala, India (Funded by: International Agency for Research on Cancer, France)  
Principal Investigator: Dr. K. Ramadas
4. Ras gene mutation and tumour response to radiation therapy (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)  
Principal Investigator: Dr. Jayaprakash Madhavan
5. Chemoradiation in Carcinoma Cervix (JHQS) (Funded by: Eli Lilly India).  
Principal Investigator: Dr. P. G. Jayaprakash
6. JHSH Plus one (Funded by: Eli Lilly)  
Principal Investigator: Dr. Jayaprakash Madhavan
7. Development of a vitro cellular model to predict tumor response to Radiation Therapy. (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala).  
Principal Investigator: Dr. P. G. Jayaprakash
8. Randomised Clinical Trial to test the efficacy of Ayurvedic Mouthwash in the management of radiation induced oral mucosites. (Funded by: World Health Organisation)  
Principal Investigator: Dr. K. Ramadas

A randomized, double blind, placebo controlled phase II study of oral recombinant human lactoferrin (rhLF) in combination with Carboplatin and Paclitaxel (C/P) chemotherapy in patients with locally advanced and/or metastatic non-small cell lung cancer (NSCLC). (Funded by: Reliance Clinical Research Services, Mumbai)

Principal Investigator: Dr. Jayaprakash Madhavan

Tobacco Cessation Clinic. (Funded by: W. H. O)

Principal Investigator: Dr. B. Rajan

A phase II Randomised, Double Blind, Placebo Controlled, Multicentre Comparative Study of ZD1839 250mg or 500mg (IRESSA™) given either continuously or concomitantly with Cisplatin plus Radiotherapy for the treatment of patients with previously untreated unresected late stage III/IV Non-Metastatic Head and Neck Squamous Cell Carcinoma. (Funded by: Quintiles Research, India Pvt. Ltd, Bangalore)

Principal Investigator: Dr. K. Ramadas

TOCS Project Follow up Programme for Oral cancer Prevention. (Funded by: International Agency for Research on Cancer, France)

Principal Investigator: Dr. K. Ramadas

A randomized, double blind, placebo controlled phase II study of oral recombinant human lactoferrin (rhLF) monotherapy in patients with locally advanced or metastatic non-small cell lung cancer (NSCLC) who have failed 1 or 2 line chemotherapy. (Reliance Clinical Research Services, Mumbai)

Principal Investigator: Dr. Jayaprakash Madhavan

Efficacy of Varanadi Ghritha as a Biological response modifier in controlling the recurrence of treated Head & Neck cancers a randomized pilot study. (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)

Principal Investigator: Dr. K. Ramadas

A phase III randomized, stratified, parallel-group, multi-center, comparative study of ZD 1839 (IRESSA) 250 mg and 500mg versus Methotrexate for previously treated patients with squamous cell carcinoma of the head and neck. (Funded by: Siro Clinpharm Pvt. Ltd., Mumbai)

Principal Investigator: Dr. K. Ramadas

Organisation of a community based cluster randomized controlled

- trial for the early detection of Breast Cancer, Thiruvananthapuram District. (Funded by: International Agency for Research on Cancer, France)  
Principal Investigator: Dr. K. Ramadas
17. A phase 3, Double Blind, placebo-controlled study of maintenance pemetrexed plus best supportive care versus best supportive care immediately following induction treatment for advanced non-small-cell Lung Cancer. (Funded by: Eli Lilly, India)  
Principal investigator: Dr. Jayaprakash Madhavan
18. A multi-centric, open label, phase III clinical trial to evaluate the safety and efficacy of interleukin - 2 (Zenotech) in patients with Renal Cell Carcinoma. (Funded by: Zenotech Laboratories, Hyderabad)  
Principal Investigator: Dr. P. G. Jayaprakash
19. A randomized, Double blind, Parallel-group, Multicentre, Phase III study comparing the efficacy and Tolerability of Fulvestrant (FASLODEX™) 500 mg with Fulvestrant (FASLODEX™) 250 mg in postmenopausal women with Oestrogen Receptor positive advanced Breast Cancer progressing or relapsing after previous endocrine therapy. (Funded by: Quintiles Research, India)  
Principal Investigator: Dr. K. Ratheesan.
20. A phase 3 randomised, placebo-controlled, double-blind study of oral CCI-779 administered in combination with Letrozole Vs. Letrozole alone as first line hormonal Therapy in postmenopausal women with locally advanced or metastatic Breast cancer. (Funded by: Quintiles Research, India)  
Principal Investigator: Dr. K. Ratheesan.
21. Production of training materials on visual screening for oral cancer. (Funded by: International Agency for Research on Cancer, France)  
Principal Investigator: Dr. K. Ramadas
22. Clinical and patho-biological effects of Curcumin on oral leukoplakia. (Funded by: Department of Biotechnology, Government of India)  
Principal Investigator: Dr. K. Ramadas
23. INDOX Trial (Funded by: Department of Pharmacology, University of Oxford, UK)  
Principal Investigator: Dr. B. Rajan
24. Psycho-social problem of the spouses of patients with Breast Cancer. (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)  
Principal Investigator: Dr. B. Rajan
25. A phase 3 randomised double blind placebo-controlled multicentric phase III study to evaluate the efficacy and safety of GW786034 compared to placebo in patients with locally advanced and/or metastatic renal cell carcinoma who have progressed following cytokine based first line treatment. (Funded by: Glaxo Smithkline)  
Principal Investigator: Dr. Francis V. James
26. An open label study to evaluate the efficacy and safety of Human recombination granulocyte colony stimulating factor developed by Biocon Limited in patients with chemotherapy induced Neutropenia (G-CSF-Study) (Funded by: Clinigene International Pvt. Ltd., Bangalore)  
Principal Investigator: Dr. Jayaprakash Madhavan
27. A randomized active control double blind double dummy parallel group multi national study to assess the efficacy, tolerability and safety of the granisetron transdermal delivery system (GTDS) in chemotherapy induced nausea and vomiting associated with the administration of moderately or high emetogenic multiday chemotherapy. (Funded by: Kendle, India)  
Principal Investigator: Dr. R. Rejnish Kumar
28. A randomized single blinded placebo controlled multicentre phase II study of Lapatinib in combination with concurrent radiotherapy and Cisplatin versus Radiotherapy and Cisplatin alone, in subjects with Stage III and IVA, B squamous Cell Carcinoma of the Head & Neck. (Funded by: Glaxo Smithkline)  
Principal Investigator: Dr. K. Ramadas
29. H3E-MC-JMHO Study: A randomized phase III trial of Alimta (Pemetrexod) and Carboplatin in extensive stage small cell Lung Cancer. (Funded by: Eli Lilly, India).  
Principal Investigator: Dr. Jayaprakash Madhavan
30. An open label randomized Phase II Study of two different dosing regimens of capecitabine in combination with intravenous Docetaxel (Q3W) in patients with locally advanced and/or Metastatic Breast Cancer (Roche study) (Funded by: Quintiles Research, India)  
Principal Investigator: Dr. K. Ratheesan.
31. A randomised open label, multicenter, phase 3 study of Epoetin Alfa plus standard supportive care versus standard supportive care in Anemic patients with Metastatic Breast Cancer receiving first line standard Chemotherapy. (Funded by: M/s. Parexel International

Synchron)

Principal Investigator: Dr. B. Rajan

32. A randomized, double blind multicenter study of Denosumab compared with Zoledronic Acid (Zometa) in the Treatment of Bone Metastases in Men with Hormone refractory Prostate Cancer (Funded by: PPD, India)

Principal Investigator: Dr. P. G. Jayaprakash

33. District Cancer Registry: Kollam. (Funded by: NCRP-ICMR Bangalore)

Principal Investigator: Dr. B. Rajan

34. Population Based Cancer Registry. (Funded by: NCRP-ICMR Bangalore)

Principal Investigator: Dr. B. Rajan

35. Amgen Study Denosumab; 20050136. (Funded by: PPD, India)

Principal Investigator: Dr. Ratheesan K.

36. Development of data management system for oncology with special reference to RCC. (Funded by: CDAC, Government of India)

Principal Investigator: Dr. B. Rajan.

37. A phase III randomized, double blind, multi centre parallel-group study to assess the efficacy of ZD6474 (ZACTIMA™) vs. Erlotinib (TARVEVA) in patients with locally advanced or Metastatic Non-small cell lung cancer after failure of at least one prior Cytotoxic Chemotherapy. (Funded by: Astra Zeneca Pharma India Ltd)

Principal Investigator: Dr. Jayaprakash Madhavan

38. International randomized study to evaluate the addition of docetaxel to the combination of cisplatin-5-fluorouracil (TCF) vs. cisplatin-5 Fluorouracil (CF) in the induction treatment of nasopharyngeal carcinoma (NPC) in children and adolescents EPC10339. (Funded by: Sanofi Aventis)

Principal Investigator: Dr. R. Rejnish Kumar

39. A randomized, double blind, placebo-controlled multicenter phase 3 study of Denosumab on prolonging bone metastasis free survival in Men with hormone-refractory Prostate cancer.

Principal Investigator: Dr. P. G. Jayaprakash

40. Phase III study of vinflunine plus gemcitabine vs. paclitaxel plus gemcitabine in patients with unresectable locally recurrent or metastatic breast cancer after prior anthracycline-based adjuvant chemotherapy. (Funded by: Chiltern International Pvt. Ltd.)

Principal Investigator: Dr. Asha Arjunan

41. A randomized, controlled phase III trial picoplatin and best supportive care (BSC) vs. BSC alone in patients with small cell lung cancer, refractory or progressive within six months of completing first line, platinum-containing chemotherapy. (Funded by: Siro clinpharm)

Principal Investigator: Dr. Jayaprakash Madhavan

42. A randomised, double blind placebo controlled, multicentre, phase III study of post operative adjuvant Lapatinib or placebo and concurrent chemoradiotherapy followed by maintenance Lapatinib or placebo monotherapy in high risk subjects with resected squamous cell carcinoma of Head and Neck. (Funded by: Glaxo Smithkline)

Principal Investigators: Dr. Ramadas K.; Dr. R. Rejnish Kumar

43. A phase 3 randomised trial of chemotherapy with or without Panitumumab in patients with metastatic and or recurrent squamous cell carcinoma of the Head and Neck. (Funded by: PPD, India)

Principal Investigator: Dr. R. Rejnish Kumar

44. A randomized double blind phase III study to compare the efficacy and safety of AZD2171 when added to 5-fluorouracil, Leucovorin and Oxaliplatin (Folfox) or capecitabine and Oxaliplatin (Xelox) with the efficacy and safety of placebo when added to Folfox or Xelox in patients with previously untreated metastatic colorectal cancer. (Funded by: Astra Zeneca Pharma India Ltd)

Principal Investigator: Dr. Jayaprakash Madhavan

45. A phase II, Open-label, randomized, multicenter trial Pazopanib in combination with Lapatinib compared to pazopanib monotherapy and lapatinib monotherapy in subjects with FIGO stage IVB metastatic or recurrent cervical cancer with zero or one prior chemotherapy regimen for advanced/recurrent disease. (Funded by: Glaxo Smithkline)

Principal Investigator: Dr. P. G. Jayaprakash

46. A randomized phase 3 study of Pemetrexed in combination with Cisplatin versus Cisplatin Monotherapy in patients with recurrent or metastatic Head and Neck Cancer. (Funded by: Eli Lilly, India)

Principal Investigator: Dr. R. Rejnish Kumar

47. A phase 2, randomized, double masked, placebo controlled study to evaluate the efficacy of SNX-1012 in reducing the duration and severity of ulcerative Oral Mucositis in patients receiving Cytotoxic chemotherapy for Breast or Lung Cancer. (Funded by: Kandle, India)

Principal Investigator: Dr. K. Ratheesan.

48. A pivotal plus phase 3 observer blind, randomized clinical trial of the efficacy and safety of APF530 compared to Aloxi for the prevention of acute onset and delayed onset chemotherapy induced nausea and vomiting following the administration of either moderately or highly emetogenic chemotherapy regimens. (Funded by: Neomedical International, Asia)  
Principal Investigator: Dr. Jayaprakash Madhavan
49. A phase III randomized, Double blind placebo controlled study to assess the efficacy and safety of 10 mg ZD4054 in combination with Docetaxel in comparison with Docetaxel in patients with Metastatic Hormone resistant prostate cancer. (Funded by: ICON Clinical Research India Pvt.Ltd.)  
Principal Investigator: Dr. P. G. Jayaprakash
50. A randomized phase II biomarker neoadjuvant study of sequential AC followed by ixabepilone compared to sequential AC followed by paclitaxel in women with early stage breast cancer not overexpressing HER-2 or Estrogen receptors. (Funded by: Bristol Myers Squibb India Pvt. Ltd.)  
Principal Investigator: Dr. B. Rajan
51. An open label, prospective, multicentric study to evaluate the safety and efficacy of biomab-EGFR (Nimotuzumab) as induction and maintenance therapy in combination with radiotherapy plus Temozolomide in Indian patients with Glioblastoma multiforme (Funded by: Clinigene, Bangalore)  
Principal Investigator: Dr. Beela Sarah Mathew

#### **Conferences, meetings, training attended**

##### **Dr. B. Rajan**

11<sup>th</sup> Varian European users meeting. Malta, June 2007

##### **Dr. P. G. Jayaprakash**

Investigators meet (Protocol: 20050147), Mumbai. 27 – 29 April 2007

##### **Dr. Parameswaran S**

Breast Cancer Symposium Academic session, Baroda. 18 – 19 May 2007.

##### **Dr. Parameswaran S., Dr. Jayaprakash Madhavan, Dr. Francis V. James, Dr. Beela Sarah Mathew, Dr. Kainickal CT, Dr. Asha Arjunan**

28<sup>th</sup> National Conference of the Association of Radiation Oncologists of India, Chennai. 29 November – 2 December 2007.



*Inauguration of Digital Radiotherapy Simulator by Sri. Panniyar Raveendran, Hon'ble Member of Parliament. (24 November 2007)*



**Dr. Jayaprakash Madhavan**

Conference on Lung cancer, Kozhikkode. 29 April 2007.

**Dr. K. Ramadas**

WHO - IARC visiting scientists award.

Expert training in cancer research, Lyon, France. From July 2007.

Head and neck programme, Goa. April 2007.

Investigators meeting, Department of Biotechnology, New Delhi. 25 - 28 June 2007.

Investigators meeting (DBT project), Kochi, Kerala. 19 - 21 April 2007.

National Workshop on Oral Cancer, Kidwai Memorial Institute of Oncology & Govt. Dental College and Research Institute, Bangalore. 24 - 26 May 2007.

**Dr. Beela Sarah Mathew**

ASCO Breast Cancer Symposium, San Francisco, United States. September 2007.

Conference on Evidence Based Management of Cancers in India: CNS Tumors, Mumbai. February 2008.

**Dr. Susan Mathews, Dr. Kalnickal C. T.**

Conference on 'Management of advanced breast cancer & ovarian cancers', Tata Memorial Hospital, Mumbai. October 2007.

**Dr. Kalnickal C.T., Dr. Asha Arjunan**

New insights in the management of ovarian cancer, Chennai. 14 - 16 February 2008.

Conference on 'Role of monoclonal antibodies in head & neck cancer', New Delhi. November 2007.

**Dr. Asha Arjunan**

Evidence-Based Medicine, Mumbai. 28 February - 1 March 2008.

**Dr. Rejnish Kumar R.**

International oral cancer conference, Amsterdam, The Netherlands. May 2007.

Clinical trial investigators meet, New Delhi. 11 - 13 March 2008.

Clinical Trial Investigators Meet, Australia. 19 - 22 July 2007.

## SURGICAL ONCOLOGY

Dr. Paul Sebastian	Professor & Head
Dr. Jem Prabhakar	Additional Professor
Dr. Shaji Thomas	Associate Professor
Dr. Bipin T. Varghese	Associate Professor
Dr. Paul Augustine	Associate Professor
Dr. Chandramohan K.	Associate Professor
Dr. Elizabeth Mathew Iype	Assistant Professor
Dr. Balagopal P.G.	Assistant Professor
Dr. Rema P.	Assistant Professor
Dr. Kurian Cherian	Assistant Professor
Dr. Madhu Muralee	Lecturer
Dr. Arun Peter Mathew	Lecturer
Dr. Suchetha S.	Lecturer

During the reporting year, 4826 surgeries (3922 major and 904 minor surgeries) and 1646 endoscopic procedures were carried out in the division. Minimal access surgeries and uro-oncology service were also initiated.

**Table 1: Major procedures**

Site	Number	%
Head & Neck	1027	33.9
Breast	1008	33.2
Gynecological	281	9.2
Thorax & abdominal	252	8.3
Bone & soft tissue	105	3.4
Genitourinary	83	2.7
Skin tumors & miscellaneous	272	8.9
<b>Total</b>	<b>3028</b>	

**Table 2: Minor procedures**

Procedure	Number	%
Minor surgeries	773	85.5
Cystoscopy	80	8.8
Cryosurgery	2	0.2
Colposcopy	22	2.4

LEEP	27	2.99
<b>Total</b>	<b>904</b>	

**Table 3: Endoscopic procedures**

Procedure	Number	%
Nasopharyngoscopy	824	50.06
Bronchoscopy	151	9.17
Oesophagogastroduodenoscopy	462	28.06
Esophageal stenting	12	0.73
Colonoscopy	297	18.04
<b>Total</b>	<b>1646</b>	

### Academic activities

Academic programmes include

DNB programme in Surgical Oncology with an annual intake of 2 candidates

Fellowship programme in Head & Neck Oncology (2 year) with an annual intake of 1 candidate

Training in Surgical Oncology for post graduate trainees of General surgery, Otolaryngology, Obstetrics & Gynecology, Oral and maxillofacial Surgery and Plastic Surgery from Medical and Dental Colleges in Kerala, Tamil Nadu and Karnataka.

We conducted seminars and site specific tumor boards on a weekly basis and monthly morbidity & mortality meetings. The faculty also participated actively in all the academic programmes of the institution.

### Ongoing Research Projects

1. Molecular ecology, molecular genetics and natural history of anterior tongue cancer in young adults without (or insignificant) tobacco exposure: can a distinct clinical entity be defined? (Funded by: Department of Biotechnology, Government of India).

Principal Investigator: Dr. Paul Sebastian

2. Prospective identification and clinical significance of tumor progenitor cells in oral and breast cancer. (Funded by: Department of Biotechnology, Government of India).

Principal Investigator: Dr. Jem Prabhakar

3. **Molecular analysis of surgical margins in oral cancer.** (Funded by: Kerala State Council for Science, Technology and Environment).  
Principal Investigator: Dr. Paul Sebastian
4. **Differential gene expression on tumor tissue at different stages menstrual cycle.** (Funded by: Kerala State Council for Science, Technology and Environment).  
Principal Investigator: Dr. Jem Prabhakar
5. **Development of a strategy for comprehensive post laryngectomy rehabilitation: A Kerala perspective.** (Funded by: Kerala State Council for Science, Technology and Environment).  
Principal Investigator: Dr. Bipin T. Varghese
6. **Pattern of care and survival studies on cancers of head and neck.** (Funded by: Indian Council for Medical Science and Technology).  
Principal Investigator: Dr. Paul Sebastian
7. **Organisation of a community based cluster randomized controlled trial for the early detection of Breast Cancer, Thiruvananthapuram District.** (Funded by: International Agency for Research on Cancer France).  
Co-investigators: Dr. Paul Sebastian, Dr. Jem Prabhakar, Dr. Paul Augustine
8. **TOCS Project Follow up Programme for Oral cancer Prevention** (Funded by: International Agency for Research on Cancer France).  
Co-investigator: Dr. Paul Sebastian
9. **Validation of p16 expression as a marker for oncogenic HPV infection in uterine cervix.** (Funded by: Kerala State Council for Science, Technology and Environment).  
Co-investigator: Dr. Rema P.
10. **A randomized single blinded placebo controlled multicentre phase II study of Lapatinib in combination with concurrent radiotherapy and Cisplatin versus Radiotherapy and Cisplatin alone, in subjects with Stage III and IVA, B Squamous Cell Carcinoma of the Head & Neck.** (Funded by: Glaxo Smithkline).  
Co-investigator: Dr. Paul Sebastian
11. **Random open label multicenter phase II study comparing the effect**

- on proliferation and tolerability of Fulvestrant (FASLODEX) 500 mg with Fulvestrant 250 mg when given as neoadjuvant treatment in postmenopausal women with ER positive breast cancer. (Funded by: Quintiles Research India Ltd.).  
Co-investigator: Dr. Jem Prabhakar
2. **Speech outcome after treatment of T1 and T2 cancers of the tongue: comparison between different treatment methods used: a multi centric study.**  
Principal Investigator: Dr. Paul Sebastian
3. **Randomized controlled study on morbidity in SOHND and methods to reduce it.**  
Principal Investigator: Dr. Paul Sebastian
4. **Assessment of tissue shrinkage in oral cancers after fixation.**  
Principal Investigator: Dr. Paul Sebastian
5. **Evaluation of Aesthetic Outcomes in breast conservation surgery following large volume resection.**  
Principal Investigator: Dr. Jem Prabhakar
6. **Assessment of risk factors for seroma after surgery for breast cancer surgery- a prospective study.**  
Principal Investigator: Dr. Jem Prabhakar
7. **A randomized controlled trial comparing oncoplastic closure of partial breast defects by mastopexy and conventional breast conserving surgery with non-closure of the lumpectomy cavity and its impact on early and late breast cosmesis and morbidity.**  
Principal Investigator: Dr. Jem Prabhakar
8. **Peroxisomal proliferator-activated receptor  $\gamma$ , a tumor promoter or tumor inhibitor: Investigation of new perspectives in breast cancer.**  
Co-investigator: Dr. Jem Prabhakar
9. **Elucidation of the role of EphB4 in the wnt pathway by RNA interference and its significance in colon cancer.**  
Co-investigator: Dr. Jem Prabhakar
10. **Protocol No.VB4-845 01 III: a-Proxinium Study.** (Funded by: PPD, India)  
Co-Investigator: Dr. Shaji Thomas
11. **Prospective randomized study comparing the efficacy of watch and wait policy with neck dissection in clinical superficial tongue**

- squamous cell cancers with NO status.  
Principal Investigator: Dr. Bipin T. Varghese
22. Salivary neoplasms: therapeutic and functional outcome retrospective study  
Principal Investigator: Dr. Bipin T. Varghese
  23. Selected molecular markers as indicators of clinical profile, tumour characteristics and treatment outcome in squamous cell carcinoma of larynx.  
Principal Investigator: Dr. Elizabeth Mathew Iype
  24. Prospective study to assess the requirement of hemithyroidectomy in laryngectomy and laryngopharyngectomy.  
Principal Investigator: Dr. Elizabeth Mathew Iype
  25. Brain Tumor Registry project.  
Principal Investigator: Dr. Balagopal P. G.
  26. Prospective study on the anatomical variations of marginal mandibular nerve.  
Principal Investigator: Dr. Balagopal P. G.
  27. Study on the adequacy of information provided to head and neck cancer patients undergoing surgery.  
Principal Investigator: Dr. Balagopal P. G.
  28. Prospective study on facial node involvement in head and neck cancers.  
Principal Investigator: Dr. Madhu Muralee
  29. Prospective study on the role of nasogastric tube in lower GI and pelvic surgeries.  
Principal Investigator: Dr. Madhu Muralee

**Merits, conferences/meetings/trainings attended, papers presented and talks delivered**

**Dr. Paul Sebastian**

- Asian National Cancer Center's Alliance Meeting, Singapore. November 2007.
- Department of Biotechnology meeting, New Delhi. July 2007.
- INDOX Annual Meeting, Thiruvananthapuram. February 2008.

**Dr. Paul Sebastian, Dr. Shaji Thomas, Dr. Bipin T. Varghese**

- Instructional course in plastic surgery organized by the Association of Plastic Surgeons of India (Kerala chapter), Thiruvananthapuram. August 2007.

Invited talk: Paul Sebastian. 'Current concepts in the management of head & neck cancers'.

Shaji Thomas. 'Effect of radiotherapy on wound healing'

Bipin T. Varghese. 'Indications, goals, options, tissue requirements and method of choice in laryngopharyngeal reconstruction'.

**Dr. Paul Sebastian, Dr. Madhu Muralee**

- Annual conference of Indian Association of Surgical Oncology, Ludhiana. September 2007.

**Dr. Paul Sebastian, Dr. Arun Peter Mathew**

- Annual CME programme of Association of Surgeons of India, Kochi. September 2007.

Invited talk: Paul Sebastian. 'Issues in the management of differentiated thyroid cancer'.

**Dr. Jem Prabhakar**

- Breast cancer focus meet, Chennai. 30 July – 1 August 2007.
- Indian Breast Cancer Initiative, Artemis Health Institute, New Delhi. January 2008. (as faculty).

7th International conference on colo-rectal cancer, New Delhi. March 2008.

Dr. Jem Prabhakar, Dr. K. Chandramohan, Dr. Madhu Muralee, Dr. Arun Peter Mathew

Conference of the Association of Surgical Gastroenterologists of Kerala (ASOGON), Cochin. January 2008.

Invited talk: Jem Prabhakar. 'GI Lymphomas'.

Dr. Jem Prabhakar, Dr. Madhu Muralee, Dr. Arun Peter Mathew

Annual peripheral meet of the Association of Surgeons of India (Kerala Chapter), Thiruvalla, Kerala. February 2008.

**Dr. Shaji Thomas, Dr. Bipin T. Varghese, Dr. Madhu Muralee**

- CME on locally advanced head & neck cancers at Amrita Institute of Medical Sciences, Kochi. January 2008.

Invited talk: Shaji Thomas. 'Surgical management of locally advanced



potentially curable head and neck cancers'

Invited panellist: Bipin T. Varghese. Discussion on 'swallowing & speech issues in head & neck cancers'

**Dr. Shaji Thomas**

Investigators meet on 'Evaluation of the efficiency and safety of Proximal in patients with recurrent squamous cell carcinoma of head & neck', New Delhi. February 2008.

CME on oral cancer, Regional Cancer Centre, Thiruvananthapuram. November 2007

Invited talk: 'Management of head & neck cancer: surgical perspective'

CME on 'End of life issues in palliative care', Thiruvananthapuram. January 2008.

**Dr. Bipin T. Varghese**

1<sup>st</sup> conference of the International Academy of Oral Oncology, Amsterdam. The Netherlands. May 2007.

Paper presented: 'The submental artery island flap in oral cancer reconstruction'

Training in Laser, Microvascular surgery & molecular epidemiology. Texas, United States. March - June 2007.

**Dr. K. Chandramohan**

UICC - ICRETT fellowship for training in hepatic surgery, National Cancer Centre, Singapore. 11 June - 10 July 2007.

INDOX Phase I clinical trial training, Oxford, UK. 17 - 21 September 2007.

**Dr. K. Chandramohan, Dr. Madhu Muralee, Dr. Arun Peter Mathew**

Annual state conference of the Association of Surgeons of India (Kerala chapter), Thiruvananthapuram. 27 - 29 April 2007.

Paper presented:

Dr. K. Chandramohan. 'Thoraco-laparoscopic versus open surgery for carcinoma esophagus'.

Poster presented: Dr. K. Chandramohan. 'Laparoscopic stomach pull up for postcricoid carcinoma'.

**Dr. Elizabeth Mathew Iype**

Mammadi - Soudaver fellowship for training in Basic Science Research, Weill Cornell Medical College, New York. June - July 2007.

Traveling Club Programme on head & neck oncology, Memorial Sloan Kettering Cancer Center, New York. June 2007.

CME on Current treatment options in cancer of larynx & hypopharynx, Tata Memorial Hospital, Mumbai. January 2008.

South Zone annual ENT conference, Thiruvananthapuram. 5 - 7 October 2007.

7<sup>th</sup> National conference of Foundation for head & neck oncology, Mangalore, Karnataka. November 2007.

**Dr. Balagopal P. G.**

National conference of the Neurological Society of India, Agra. December 2007.

Neurological Society of India (Kerala chapter) meeting, Kolencherry. November 2007.

Paper presented: 'Sinonasal Terato-cardino-sarcoma: a case report'. Neurological Society of India (Kerala chapter - South zone) meeting, Alappuzha. April 2007.

International conference on cerebro-vascular disorders, Thiruvananthapuram. September 2007.

**Dr. Rema P.**

AGOICON 2007, Meenakshi Mission Hospital and Research Centre, Madurai, Tamil Nadu. November 2007.

Paper presented:

'Role of secondary cytoreductive surgeries in the treatment of recurrent ovarian cancers'.

Workshop on colposcopy & treatment of CIN, PVS Hospital, Kochi. October 2007. (as faculty)

Annual conference of the All Kerala Congress of Obstetrics and Gynaecology, Alappuzha. 11 February 2007.

Invited talk: 'Border line ovarian tumours'.

**Dr. Rema P., Dr. Suchetha S.**

8<sup>th</sup> International Conference on Cervical Cancer (RGCON 2007), Rajiv Gandhi Cancer Institute and Research Centre, New Delhi. April 2007.

Poster presented: 'Effectiveness and safety of LEEP in treatment of C beginners experience'

**Dr. Madhu Muralee, Dr. Arun Peter Mathew**  
Hepato-biliary conference, Lakeshore Hospital, Kochi, March 2008.

**Dr. Kurian Cherian**  
Gastrointestinal laparoscopy conference, V.G Hospital, Coimbatore, May 2007.

**Dr. Arun Peter Mathew**  
Conference on 'Management of advanced breast cancer & ovarian cancers', Tata Memorial Hospital, Mumbai, October 2007.

## MEDICAL ONCOLOGY

Dr. Geetha N.	Additional Professor & Head
Dr. Sreejith G. Nair	Associate Professor in Hematology & Blood Transfusion
Dr. Mirsa Hussain	Assistant Professor
Dr. N. P. Prakash	Assistant Professor
Dr. Santhosh Thyagu	Assistant Professor
Dr. Lal V. S.	Resident Medical Officer

### Clinical activities

The Department of Medical Oncology is responsible for the diagnosis and management of haematological and lymphoreticular malignancies, sarcomas and other solid tumors where intensive chemotherapy is indicated. It conducts outpatient clinics 6 days a week. About 1500 new cases were treated during 2007. The number of outpatient attendance was about 24000.

Special procedures like bone marrow aspiration & biopsy, liver biopsy, intrathecal chemotherapy and central venous catheter insertions were done daily. About 2500 patients were admitted for administration of high profile chemotherapy and management of emergencies and complications. Critically ill patients were closely monitored and managed in the ICU. About 150 patients with CML were enrolled in the GIPAP programme last year and are getting free Imatinib.

The new 4 bedded Bone marrow transplant started functioning in October 2007.

Autologous bone marrow transplantation following High dose chemotherapy for multiple myeloma was performed in 12 patients last year.

### Academic activities

DNB programme started in Medical Oncology and the candidate is undergoing training. Post graduate residents in general medicine and radiation oncology were given training in medical oncology. In addition, staff nurses were given training in patient care.

### Ongoing Research Projects

1. Randomized, Controlled, Open-labeled, Multicentre, Comparison of Thalidomide versus High dose Dexamethasone for the treatment of Relapsed, Refractory Multiple Myeloma. (Funded by: Reliance Clinical Research services)  
Principal Investigator: Dr. Sreejith G. Nair
2. Efficacy and safety of XM01 compared to placebo and Epoetin beta in patients with solid tumours receiving platinum-containing chemotherapy. A multinational, multicentre, randomized, placebo and active controlled, double blind, parallel- group Phase III study (XM01-21, XM01-22, XM01-23). (Funded by: Lambda Therapeutics Research)  
Principal Investigator: Dr. Geetha N.
3. Protocol PIX 301: Pixantrone Vs. other chemotherapeutic agents for third line single agent treatment of patients with relapsed aggressive non-hodgkins lymphoma. (Funded by: Quintiles Research, India)  
Principal Investigator: Dr. Geetha N.
4. FM-CL 1 A phase I/IIa, Open label, dose –Escalation study to determine the safety, tolerance and preliminary activity of intravenous high dose Flunhenazine HCL in patients with Advanced Multiple Myeloma.  
Principal Investigator: Dr. Geetha N.
5. LYM-3001: A Randomized, Open-Label, Multicenter Study of VELCADE with Rituximab or Rituximab alone in Subjects with Relapsed or Refractory, Rituximab Naive or Sensitive Follicular B-cell Non-Hodgkin's Lymphoma. (Funded by: Johnson & Johnson)  
Principal Investigator: Dr. Sreejith G. Nair
6. Molecular Remission with Arsenic Trioxide in Acute Promyelocytic Leukaemia: Indian APML Study Group – IASG
7. LYM-3002: A Randomized, Open Label, Multicentre Phase III Study of the Combination of Rituximab, Cyclophosphamide, Doxorubicin, VELCADE and Prednisone (VcR-CAP) or Rituximab, Cyclophosphamide, Doxorubicin, Vincristine and Prednisone (R-CHOP) in Patients.
8. An open label, randomized, multicenter phase III trial of Dasatinib



*On the occasion of the inauguration of Bone Marrow Transplant Unit (6 October 2007)*

(sprycel) vs. standard dose imatinib (400mg) in the treatment of subjects with newly diagnosed chronic phase Philadelphia chromosome positive chronic Myeloid Leukemia. (Funded by: Bristol-Myers Squibb India Pvt. Ltd.)  
Principal Investigator: Dr. Geetha N.

9. A phase II open label, randomized, Multicenter trial of GW786034 (Pazopanib) in combination with GW572016(Lepatinib) compared to Lepatinib alone a first line therapy in subjects with advanced or Metastatic Breast cancer with ErbB2 Fluorescence in situ Hybridisation (FISH) positive tumours. (Funded by: Glaxo Smithkline)  
Principal Investigator: Dr. Santhosh Thyagu

10. Protocol SGL 2003: Phase II study of Z10-101 in advanced Blood and bone marrow cancers. (Funded by: Pharmaceuticals Research Association, India)  
Principal Investigator: Dr. Santhosh Thyagu

#### **Meetings/Training attended**

##### **Dr. Geetha N.**

Training in Bone marrow transplant, Fred Hutchinson Cancer Centre, Seattle Cancer Care Alliance. March – May 2008.

##### **Dr. Geetha N., Dr. Prakash N. P.**

20<sup>th</sup> Annual meeting of the American Society of Hematology, Atlanta, United States. 8 – 11 December 2007.

##### **Dr. Sreejith G. Nair**

Examiner, DM (Medical Oncology), Chennai. 2007.

##### **Dr. Prakash N. P.**

Training in Bone Marrow Transplantation, Christian Medical College, Vellore. November 2007

## PAEDIATRIC ONCOLOGY

Dr. P. Kusuma Kumary Additional Professor  
 Dr. Priya Kumari T. Associate Professor  
 Dr. Anu Ninan Lecturer

This division continued to work for the primary care of pediatric patients up to the age of 14 years registered in this centre.

### Clinical Activities

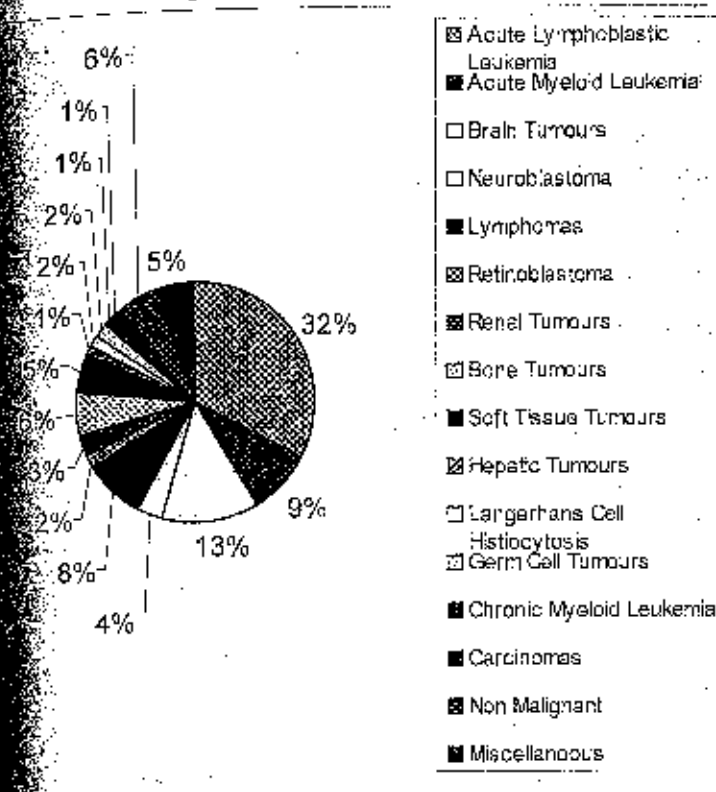
Pediatric Oncology outpatient service functions six days a week. The distribution pattern of Pediatric patients registered during the report year is given below.

**Table 4: Distribution of pediatric patients registered**

Case Diagnosis	Number	Percentage
Acute Lymphoblastic Leukaemia	180	32.6%
Acute Myeloid Leukaemia	48	8.7%
CML	5	0.9%
Brain Tumour	70	12.7%
Lymphoma	45	8.1%
Soft Tissue Sarcoma	30	5.4%
Neuroblastoma	21	3.8%
Wilm's Tumour	16	2.9%
Bone Tumour	32	5.8%
Retinoblastoma	10	1.8%
Germ Cell Tumour	11	1.9%
Hepatic Tumour	5	0.9%
Langerhans Cell Histiocytosis	10	1.8%
Carcinoma	8	1.4%
Non Malignant	34	6.1%
Miscellaneous	26	4.7%
Total number of new patients	551	

Total outpatient visits : 18539  
 Total number of inpatients : 1056

**Fig. 1 : Distribution of Patients**



As in the previous years, the most common malignancy reported was Acute lymphoblastic leukaemias (32.6%).

All new patients underwent detailed diagnostic workup and appropriate treatment were given.

Pediatric tumour board with a multidisciplinary team consisting of Pediatric oncologists, Radiation oncologists, Pediatric Surgeons and Pathologists was conducted every Monday at 2pm and major management decisions were taken by this team.

We conducted counseling sessions for parents of pediatric cancer patients every day. Detailed counseling sessions were given every Saturday.



### Academic and Research activities

This division actively participated in the teaching and training programme of post graduates of Pediatrics and Radiotherapy, undergraduate medical students, M.Sc. nursing students and B.Sc. nursing students.

### Cultural Activities

We organized celebrations on Vishu, Onam, Deepavali and Christmas. New clothes were distributed to the children on festivals like Onam and Christmas. Sweets and toys were also distributed on various occasions.

### Conferences attended

#### Dr. P. Kusumakumari, Dr. T. Priya Kumari

39<sup>th</sup> Annual Congress of the International Society of Pediatric Oncology (SIOP 2007), Mumbai. 1 – 3 November 2007.

#### Dr. P. Kusumakumari

Task force meeting on retinoblastoma, New Delhi. 9 April 2007.

Indian Academy of Pediatrics (IAP) National consensus on Hodgkin Lymphoma, Mumbai. 11 – 12 August 2007.

Indian Academy of Pediatrics (IAP) National consensus on Non-Hodgkin Lymphoma, Mumbai. 30 June – 1 July 2007.

#### Dr. T. Priya Kumari

14<sup>th</sup> European Cancer Conference (ECCO 14), Barcelona, Spain. 22 – 27 September 2007.



'Prayasha' - the paediatric oncology patient support group celebrating X'mas / New year with the inpatients.

## PATHOLOGY

Dr. Elizabeth K. Abraham	Professor & Head
Dr. Jayasree K.	Additional Professor
Dr. Rekha A. Nair	Additional Professor
Dr. Anitha Mathews	Additional Professor
Dr. Thara Somanathan	Associate Professor
Dr. Nileena Nayak	Associate Professor
Dr. K. Raveendran Pillai	Associate Professor of Cancer research in Cytopathology
Dr. T.R. Preethi	Assistant Professor
Dr. K. Sujathan	Assistant Professor of Cytotechnology
Mrs. V.S. Veena	Sr.Cytotechnologist
Mr. K.S. Mari	Cytotechnologist
Mr. K.S. Jayalal	Cytotechnologist

### Achievements

- Standardisation of FISH (Fluorescent In Situ Hybridisation) was done for detection of HER-2/neu amplification in Breast cancer, and BCR/ABL in Chronic Myeloid Leukemia.
- Introduced HPV (Human Papilloma Virus) detection by PCR method, as routine Molecular diagnostic test in Cervical scrape smears.
- Conducted academic programmes with the following international faculties.

Dr. Jan W. Lowe, Specialist Breast Pathologist from University Hospital of North Tees, UK, spent one month during October – November in the Department. He had conducted weekly slide discussions and slide seminar on Breast Pathology.

Dr. Fredrick Bosman, Gastro Intestinal Pathologist from Lucerne, Switzerland visited the Department and gave slide seminar and slide discussion on 'Inflammatory Pathology of Gastrointestinal Tract'.

## I. DIAGNOSTIC SERVICES

### Work done at a glance

During the report year, a total of 30451 pathology reports were generated and these include 11342 Surgical pathology, 13346 Cytopathology, and 5763 Haematopathology reports. Among them 10267 were malignant reports. (Table 5 & Fig. 2). Total number of Immuno histochemical staining done were 7612 numbers. Special/ advanced tests like Frozen section (190 cases) and Molecular biology (28 tests) were also done (Table 6)

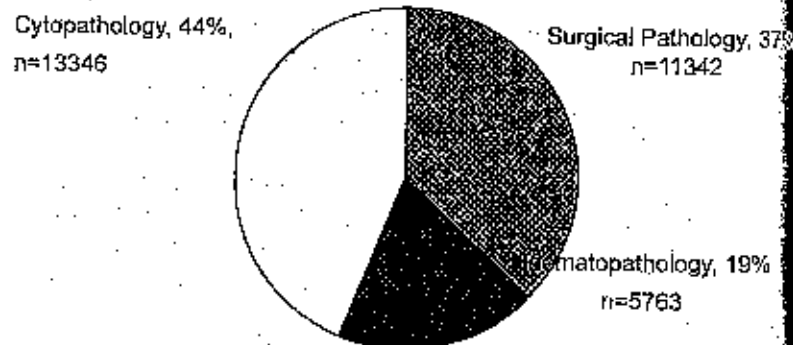
Table 5 : Work done

	Surgical pathology	Haemato-pathology	Cytopathology	Total
No. of reports	11342	5763	13346	30451
Malignant	7017	979	2271	10267

Table 6 : Special / Advanced tests

Immunohistochemical staining	Molecular tests	Frozen section diag.
7612	28	190

Fig. 2 : Total work done (n = 30451)

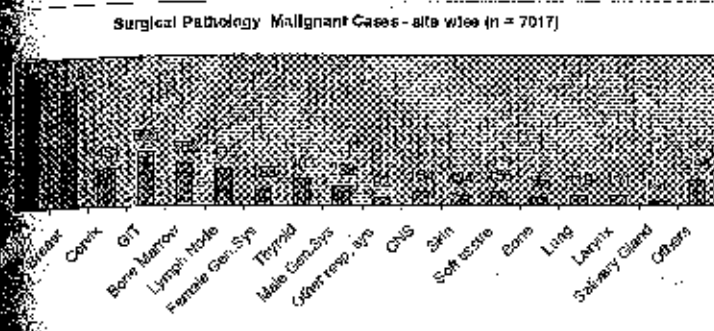


### A. SURGICAL PATHOLOGY

Histopathological specimen of 11342 cases were processed during the year under report, of which 7463 cases were surgical specimens of the

Centre and 3879 were review cases referred from other hospitals. Among this malignancy was reported in 7017 cases. The predominant sites of malignancy were Oral cavity, Breast, GIT and Lymph nodes (Fig 3). The workload indicated includes 690 cases of second opinion (non registered) cases from out side Institutions / Hospitals also.

Fig.3 : Surgical Pathology : Malignant Cases (site wise)



### Immunohistochemical (IHC) staining.

IHC staining was done in cases, where there was diagnostic difficulty by routine stains. Immunophenotyping was carried out on almost all Lymphoma cases. A total of 7612 immunohistochemical tests were performed in the current year, among which 2511 tests were for assessing Estrogen & Progesterone receptor status and 537 for Her2neu marker detection in Breast cancer patients. Rest of the Immuno markers (4564) were done for proper classification of undifferentiated tumors.

### Frozen section reporting :

Routine reporting of frozen sections is being done in the operation theatre setting. A total number of 190 cases were reported, based on which major surgical decisions were taken.

### B. CYTOPATHOLOGY

The main samples examined for cytological abnormalities include, Fine needle aspirations, Cervical smears, Body fluids and Sputum.

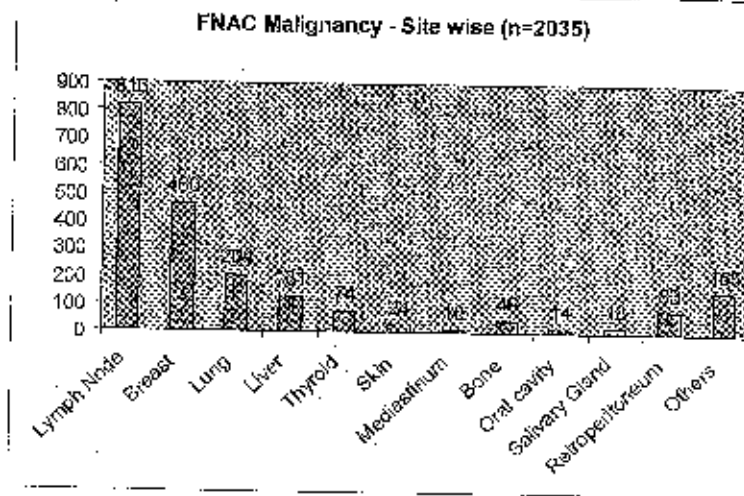
### Fine Needle Aspiration Cytology

5441 Fine needle aspirations were performed and the major sites of aspiration were lymph node (1397), breast (1157) and thyroid (1072). Out



of this 2035 were malignant lesions. Among the malignancies, major were from lymph nodes (816) of which 226 were metastatic tumours. Total number and split up of malignancies at various sites are depicted in Fig. 4.

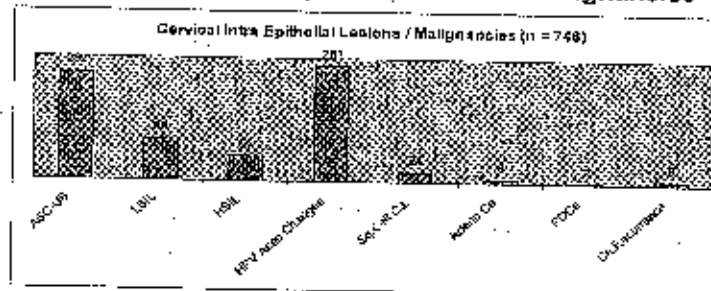
**Fig.4 : FNAC Malignancy (Site wise)**



**Cervical Smear**

6132 Cervical Smears were examined in the reporting year among which 4599 cases were from different projects. Out of this, 746 were having epithelial lesions / malignancy (Fig.5) and 5386 were negative for epithelial lesions. Second opinion on cervical smears were also given to the smears referred from Peripheral centres (ECDCs).

**Fig. 5 : Cervical Intra Epithelial Lesions / Malignancies**



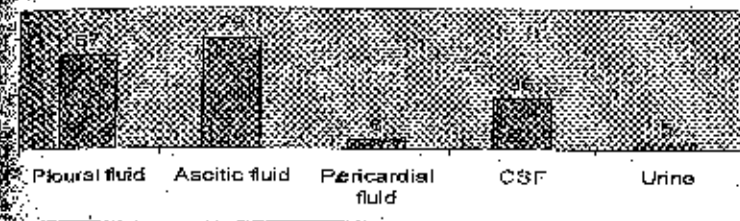
ASCUS: Atypical Squamous Cells of Undetermined Significance  
 LSIL: Low grade Squamous Intra epithelial Lesion  
 HSIL: High grade Squamous Intra epithelial Lesion

**Fluid Cytology**

A total of 2389 effusions and other body fluid samples were processed in the reporting year, which include 1109 samples of Cerebrospinal Fluid (CSF), 419 ascitic fluid, 809 pleural fluid, 28 urine and 24 pericardial fluids. Among these, 193 samples were reported to have malignant cells.

**Fig.6 : Fluid Cytology - Malignant**

**Fluid Cytology-Malignant (n=193)**



**Sputum Cytology**

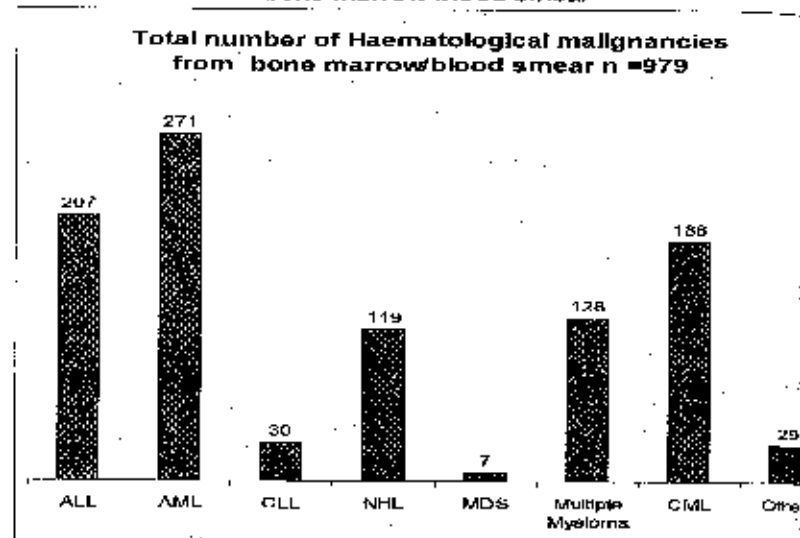
Sputum samples from 1338 patients were studied. 3-5 morning samples were collected from each patient on consecutive days and 2 smears were prepared from each sample. 181 malignancies were reported. These include 60 Non-small cell carcinomas (Adenocarcinoma-25, Squamous cell carcinoma 10, Unclassified-25) and 9 Small cell carcinomas.

**HAEMATOPATHOLOGY**

5768 Haematopathological cases were studied during this year. These include 3195 Bone marrow samples, 2428 Peripheral blood smears and 1140 Haematology slide reviews. 979 cases of malignancy were reported which include 159 cases of Precursor B cell lymphoblastic leukemia (B-ALL), 48 cases of Precursor T cell lymphoblastic leukemia, 271 cases of Acute Myeloid leukemia (AML), 188 cases of Chronic Myeloid Leukemia (CM), 30 cases of Chronic Lymphatic Leukemia (CLL), 119 cases of Non Hodgkins Lymphoma (NHL), and 128 cases of Multiple Myeloma (MM)

cases.(Fig.7) In addition to special stains, Immunophenotyping was done in 124 cases of Acute leukemias

**Fig. 7: Haematological malignancies from bone marrow blood smear**



#### D. MOLECULAR PATHOLOGY

PCR based HPV DNA test was standardized and this service has been extended to patients registered in the Early Cancer Detection Clinic from November 2007 onwards. Cervical scrape smears obtained from women attending the early cancer detection clinics of the Community Oncology division were referred for HPV analysis. 28 samples were processed during this two months period of which 5 samples were found to be positive for oncogenic HPV.

#### II. TEACHING / TRAINING PROGRAMMES

##### Regular Courses undertaken.

Course	Course Duration
1. DNB Course in Pathology	3 years
2. Postdoctoral Certificate Course in Oncopathology for Pathologists	1 year
3. Cytotechnologists Training Course	1 year

1. Cytotechnicians Training Course	6 months
2. Advanced Training Course in Histotechnology for Histotechnicians	9 months

##### Short term training programmes for B.Sc. (MLT) students

Practical orientation was given to 138 B.Sc MLT students of MG University, postgraduate for one month each in the Department in batches.

##### MD Pathology students

Regular postings were given to MD Pathology students of Kottayam, Calicut, Alleppey and Trivandrum Medical Colleges.

##### DNB & MD Radiotherapy, DNB Surgical and Medical Oncology trainees

Regular postings were given to MD and DNB students of Radiotherapy from RCC and Medical college, and DNB students of Medical Oncology and Surgical Oncology.

##### Histotechnology/Immunohistochemistry Training

Hands on training on Histotechnology and Immunohistochemistry were given to Laboratory technicians from various institutions.

##### Ongoing Research Projects

1. IIST grant for development of infrastructure. (Funded by: Department of Science and Technology, Government of India)  
Principal Investigator: Dr. Rekha A. Nair
2. Adjuvant Tamoxifen in Breast cancer Long against shorter. (ATLAS). (Funded by: Clinical Services Unit, Oxford, UK)  
Co-investigator: Dr. Elizabeth K. Abraham
3. Multicentric project on evaluation & validation of Molecular markers in Oral cancer. (Funded by: Department of Biotechnology, Govt. of India)  
Co-investigator: Dr. Elizabeth K. Abraham
4. Micro RNA Profiling in Leukemias and Lymphomas. (Funded by: Department of Biotechnology, Government of India)  
Principal Investigator: Dr. Rekha A. Nair
5. Micro RNA Profiling of cancer breast and Colon. (Funded by: Department of Biotechnology)  
Principal Investigator: Dr. Rekha A. Nair

- Co-investigator: Dr. Jayasree K.
6. TOCS Project Follow up Programme for Oral cancer Prevention (Funded by: International Agency for Research on Cancer, France)  
Co-investigators: Dr. Elizabeth K. Abraham, Dr. Thara Somanathan
  7. Organisation of a community based cluster randomized controlled trial for the early detection of Breast Cancer, Thiruvananthapuram District. (Funded by: International Agency for Research on Cancer, France)  
Co-investigators: Dr. Elizabeth K. Abraham, Dr. Thara Somanathan
  8. Study of Galectin-1, Galectin-3, T Antigen and B Cl-2 Expression in Breast Cancer.  
(Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)  
Principal Investigator: Dr. Sujathan K.
  9. Tumour suppressor genes in Nasopharyngeal carcinoma: an evaluation. (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)  
Principal Investigator: Dr. Jayasree K.
  10. Pattern of care and survival studies on cancers of cervix, female breast and head and neck. (Funded by: Indian Council of Medical Research, New Delhi).  
Co-investigator: Dr. Jayasree K.
  11. Assessment of the role of Tyrosine kinase EphB4 in the wnt pathway by RNA interference and its significance in colon cancer: towards novel cancer therapeutics. (Collaborative study with Centre for cellular and molecular biology, CCMB)  
Co-investigator: Dr. Jayasree K.
  12. Molecular markers as indicators of clinical profile, tumour characteristics and treatment outcome in squamous cell carcinoma of the larynx.  
Co-investigator: Dr. Jayasree K.
  13. Human Papilloma Virus associated cancers in Natural Background Radiation area of Kerala: Evaluation of HPV genotypes in relation to radiation exposure levels. (Funded by: Department of Epidemiology

and Preventive medicine. Kagoshima University, Japan)

Co-investigator: Dr. Jayasree K.

14. Evaluation of early detection of cervical cancer precursors by Visual Inspection with Lugol's Iodine (VILI), Visual Inspection with Acetic Acid (VIA) and magnified VIA (VIAM) in Kerala, India. (Funded by: IARC and Bill Gate Foundation through ACCP)

Co-investigator: Dr. Thara Somanathan

15. Study of ZD1839 250mg or 500mg (IRESSATM) given either continuously or concomitantly with Cisplatin plus Radiotherapy for the treatment of patients with previously untreated unresected late stage III/IV Non-Metastatic Head and Neck Squamous Cell Carcinoma. (Funded by: Quintiles Research (India) Pvt. Ltd, Bangalore)

Co-investigator: Dr. Nileena Nayak

16. A phase III randomized, stratified, parallel-group, multi-center, comparative study of ZD 1839 (IRESSA) 250 mg and 500mg versus Methotrexate for previously treated patients with squamous cell carcinoma of the head and neck. (Funded by: Siro Clinpharm Pvt. Ltd., Mumbai)

Co-investigator: Dr. Nileena Nayak

17. Thiruvananthapuram Corporation Cancer Control Programme. (Funded by: Thiruvananthapuram Corporation).

Co-investigator: Dr. Sujathan K.

18. District Cancer Control Programme, Thiruvananthapuram (Funded by: NCCP, Government of India).

Co-investigator: Dr. Sujathan K.

#### Merits, Conferences/meetings/training attended

Dr. Elizabeth K. Abraham

PhD guide, University of Kerala, Thiruvananthapuram.

Reviewer, Indian Journal of Medical Research, ICMR

Chairperson, Indian Association of Pathologists & Microbiologists (Thiruvananthapuram city br.)

Fellowship for HER 2 Status in Breast Cancer at National Cancer Centre, Singapore. April 2007.

Dr. Jayasree K.

Training in Fluorescent In Situ Hybridization (FISH) and molecular Pathology techniques, Mayo Medical Laboratories, United States. September 2007

Practical Surgical Pathology CME Programme, Mayo Clinic, Rochester, Minnesota, United States. 13 – 15 September 2007.

Training in newer cytology techniques, FISH in cytology, MD Anderson Cancer Center, Houston, Texas, United States. August 2007.

**Dr. Jayasree K., Dr. Preethi T.R.**

Prof. S. J. Nagalotimath Memorial 13<sup>th</sup> International CME in Pathology, Bangalore. January 2008.

**Dr. Jayasree K., Dr. Anitha Mathews, Dr. Nileena Nayak, Dr. Preethi T.R.**

5<sup>th</sup> National CME in Pathology, Kozhikkode. 11-13 August 2007.

**Dr. Rekha A. Nair, Dr. Nileena Nayak**

National meeting on guidelines for immunophenotyping of hematolymphoid neoplasms and workshop on detection of MRD and analysis of flow cytometric data. Tata Memorial Hospital, Mumbai. 13 – 15 March 2008.

**Dr. Anitha Mathews**

Observer trainee, Department of Neuropathology, National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore. May 2007.

**Dr. Thara Somanathan**

National Workshop on Oral Cancer, Kidwai Memorial Institute of Oncology & Govt. Dental College and Research Institute, Bangalore. - 26 May 2007. (as faculty)

Training course on early detection, prevention, and treatment of cervical pre-cancers, Ambalikkai, Tamil Nadu. November 2007.

**Dr. Preethi T. R.**

60<sup>th</sup> IAPM Kerala chapter meeting, Kozhikkode. August 2007.

61<sup>st</sup> IAPM Kerala Chapter meeting, Thrissur. February 2008.

**Dr. Sujathan K.**

Workshop and residential course on molecular diagnostics in Oncopathology. Tata Memorial Hospital, Mumbai. 12 - 18 October 2007.

27<sup>th</sup> Annual convention of the Indian Association for Cancer Research (IACR), The Gujarat Cancer & Research Institute, Ahmedabad, Gujarat. 7 – 9 February 2008.

## IMAGEOLOGY

Dr. K. Ramachandran	Professor & Head
Dr. A.S. Krishnakumar	Additional Professor
Dr. M.Venugopal	Assistant Professor
Dr. Jiji V.	Assistant Professor
Dr. Sumod Mathew Koshy	Lecturer

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

**Table 7 : Investigations done**

Plain X-rays	20773
<b>Special investigations using X-rays</b>	
Barium Meal	24
Barium Swallow	180
Barium enema	13
Mammogram single	1689
Mammogram Double	2082
CT Scan	10149
CT & guided procedures	324
Ultrasound	10300
Doppler studies	188
USS guided FNAC	298

### Academic Activities:

The functioning of our new 1.5 Tesla MRI unit with spectroscopy was the highlight of this year's activity. The DNB programme in Radiodiagnosis has been in full swing. Two more candidates joined this year. Training and short term postings in various imaging modalities were provided to Radiologists and post graduates from various parts of Kerala. In addition to the daily Tumour Boards, the Division actively participated in monthly meetings of Trivandrum Radiology Club, Pulmonary Radiology Club in SUT and other centers.

## BREAST MRI

Magnetic resonance imaging (MRI) of the breast has advanced rapidly since its introduction in the mid-1980s. In the past 5 years, there has been widespread adoption of this technology in part due to a number of significant multicenter trials showing the efficacy of MRI compared with mammography and ultrasound. The underlying reason behind the rapid acceptance of breast MRI is the superior sensitivity of MRI for detection of breast cancer compared with mammography and ultrasound. Current efforts are directed toward improving the specificity of MRI to prevent unnecessary biopsy and to tailor treatment regimens that are consistent with tumor response. DCE-MRI is frequently performed in an attempt to improve the specificity of MRI in characterizing breast lesions.

The Regional Cancer Centre in Trivandrum handles many cases referred from peripheral hospitals for breast imaging. This includes referrals for mammography, ultrasound and MR mammography and image guided biopsy procedures. The Centre has a dedicated breast unit for work up of all cases and for treatment. We perform about 50 cases of breast MRI every month mainly as a problem solving modality.

## Ongoing Research Projects

1. A randomized single blinded placebo controlled multicentre phase II study of Lapatinib in combination with concurrent radiotherapy and Cisplatin versus Radiotherapy and Cisplatin alone, in subjects with Stage III and IVA, B squamous Cell Carcinoma of the Head & Neck. (Funded by: Glaxo Smithkline)  
Co-investigators: Dr. K. Ramachandran, Dr. M. Venugopal
2. An open label, prospective, multicentric study to evaluate the safety and efficacy of biomab-EGFR (Nimotuzumab) as induction and maintenance therapy in combination with radiotherapy plus Temozolomide in Indian patients with Glioblastoma multiforme. (Funded by: Clinigene, Bangalore)  
Co-investigator: Dr. K. Ramachandran
3. A phase II open label, randomized, Multicenter trial of GW786034 (Pazopanib) in combination with GW572016(Lapatinib) compared to Lapatinib alone a first line therapy in subjects with advanced or Metastatic Breast cancer with ErbB2 Fluorescence in situ Hybridisation (FISH) positive tumours. (Funded by: Glaxo Smithkline)

Co-investigator: Dr. K. Ramachandran

4. An open label randomized Phase II Study of two different dosing regimens of capecitabine in combination with intravenous Docetaxel (Q3W) in patients with locally advanced and /or Metastatic Breast Cancer (Roche study) (Funded by: Quintiles Research, India)  
Co-investigator: Dr. K. Ramachandran
5. A randomized, double blind, placebo controlled phase II study of oral recombinant human lactoferrin (rhLF) in combination with Carboplatin and Paclitaxel (C/P) chemotherapy in patients with locally advanced and /or metastatic non-small cell lung cancer (NSCLC). (Funded by: Reliance Clinical Research Services, Mumbai)  
Co-investigator: Dr. A. S. Krishnakumar
6. A phase III randomized, double blind, multi centre parallel-group study to assess the efficacy of ZD6474 (ZACTIMA™) vs. Erlotinib (TARVEVA) in patients with locally advanced or Metastatic Non small cell lung cancer after failure of at least one prior Cytotoxic Chemotherapy. (Funded by: Astra Zeneca Pharma India Ltd)  
Co-investigator: Dr. A. S. Krishnakumar
7. A randomized, double blind, placebo controlled phase II study of oral recombinant human lactoferrin (rhLF) monotherapy in patients with locally advanced or metastatic non-small cell lung cancer (NSCLC) who have failed 1 or 2 line chemotherapy. (Reliance Clinical Research Services, Mumbai)  
Co-investigator: Dr. A. S. Krishnakumar
8. A phase 3, Double Blind, placebo-controlled study of maintenance pemetrexed plus best supportive care versus best supportive care immediately following induction treatment for advanced non-small cell Lung Cancer. (Funded by: Eli Lilly, India)  
Co-investigator: Dr. A. S. Krishnakumar
9. H3E-MC-JMHO Study: A randomized phase III trial of Alimta (Pemetrexod) and Carboplatin in extensive stage small cell Lung Cancer. (Funded by: Eli Lilly, India)  
Co-investigators: Dr. A. S. Krishnakumar, Dr. Sumod Mathew Koshy

10. A phase II, Open-label, randomized, multicenter trial Pazopanib combination with Lapatinib compared to pazopanib monotherapy and lapatinib monotherapy in subjects with FIGO stage IVb metastatic or recurrent cervical cancer with zero or one prior chemotherapy regimen for advanced/recurrent disease. (Funded by: Glaxo Smithkline)  
Co-investigator: Dr. A. S. Krishnakumar
11. A randomized, controlled phase III trial picoplatin and best supportive care (BSC) vs. BSC alone in patients with small cell lung cancer, refractory or progressive within six months of completing first line, platinum-containing chemotherapy. (Funded by: Sirco clinpharm)  
Co-investigator: Dr. A. S. Krishnakumar
12. A randomized double blind phase III study to compare the efficacy and safety of AZD2171 when added to 5-fluorouracil, Leucovorin and Oxaliplatin (Folfox) or capecitabine and Oxaliplatin (Xelox) with the efficacy and safety of placebo when added to Folfox or Xelox in patients with previously untreated metastatic colorectal cancer. (Funded by: Astra Zeneca Pharma India Ltd.)  
Co-investigator: Dr. A. S. Krishnakumar
13. Organisation of a community based cluster randomized controlled trial for the early detection of Breast Cancer, Thiruvananthapuram District. (Funded by: International Agency for Research on Cancer, France)  
Co-investigator: Dr. M. Venugopal
14. A phase 3 randomised double blind placebo-controlled multicentric phase III study to evaluate the efficacy and safety of GW786034 compared to placebo in patients with locally advanced and/or metastatic renal cell carcinoma who have progressed following cytokine based first line treatment. (Funded by: Glaxo Smithkline)  
Co-investigator: Dr. M. Venugopal
15. Protocol PIX 301: Pixantrone Vs. other chemotherapeutic agents for third line single agent treatment of patients with relapsed aggressive non-hodgkins lymphoma. (Funded by: Quintiles Research, India)

Co-investigator: Dr. M. Venugopal

16. A randomized, Double blind, Parallel-group, Multicentre, Phase III study comparing the efficacy and Tolerability of Fulvestrant (FASLODEXTM) 500 mg with Fulvestrant (FASLODEXTM) 250 mg in postmenopausal women with Oestrogen Receptor positive advanced Breast Cancer progressing or relapsing after previous endocrine therapy. (Funded by: Quintiles Research, India)  
Co-investigator: Dr. M. Venugopal
17. Phase III study of vinflunine plus gemcitabine vs. paclitaxel plus gemcitabine in patients with unresectable locally recurrent or metastatic breast cancer after prior anthracycline-based adjuvant chemotherapy. (Funded by: Chiltern International Pvt. Ltd.)  
Co-investigator: Dr. Jiji V.
18. International randomized study to evaluate the addition of docetaxel to the combination of cisplatin-5-fluorouracil (TCF) vs. cisplatin-5 Fluorouracil (CF) in the induction treatment of nasopharyngeal carcinoma (NPC) in children and adolescents EFC10339. (Funded by: Sanofi Aventis)  
Co-investigator: Dr. Sumod Mathew Koshy
19. A randomised open label, multicenter, phase 3 study of Epoetin Alfa plus standard supportive care versus standard supportive care in Anemic patients with Metastatic Breast Cancer receiving first line standard Chemotherapy. (Funded by: M/s. Parexel International Synchron)  
Co-investigator: Dr. Sumod Mathew Koshy

**Merits, conferences / meetings/workshops attended, papers presented.**

**Dr. K. Ramachandran**

Examiner, DNB (Radiodiagnosis), National Board of Examinations.  
Examiner, MD (Radiodiagnosis), Sri Ramachandra Medical College and Research Institute, Chennai.  
Meeting of subject expert committee for FIST programme of Department of Science & Technology, Indian National Science Academy, New Delhi. 27 - 29 June 2007.

Investigators meeting (Project: N407B1), New Delhi. February 2008.



**Dr. A.S. Krishna Kumar**

International Teleradiology and Pacs conference, Bangalore. 21 – 22 April 2007.

RSNA conference, Chicago, USA. 25 – 30 November 2007.

Annual meeting of the Indian Radiological and Imaging Association, Kerala Chapter, Thiruvananthapuram. 22 – 23 December 2007.

MERCK global investigators meet, Mumbai. 23 October 2007.

AMGEN global investigators meet, Mumbai. 27 October 2007.

Eli Lilly global investigators meet, Chennai. 4 December 2007.

PEREGRINE global investigators meet, Bangalore. February 2008.

**Dr. M. Venugopal**

Indian Radiological and Imaging Association National Conference, Bangalore. 8 - 11 January 2008.

CME on Pulmonology, Medical College, Thrissur. February 2008.

Paper presented: 'Interstitial lung disease'

**Dr. M. Venugopal , Dr. Jiji V., Dr. Sumod Mathew Koshy**

Meeting on clinical and biomedical MRI, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram. 1 - 5 August 2007.

**Dr. M. Venugopal, Dr. Sumod Mathew Koshy**

Jyothirgamaya 4<sup>th</sup> National workshop on sonography. Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram. 11 May 2007.

**Dr. Jiji V., Dr. Sumod Mathew Koshy**

Workshop on pre-malignancies and cancers of the oral cavity, Regional Cancer Centre, Thiruvananthapuram. 7 November 2007.

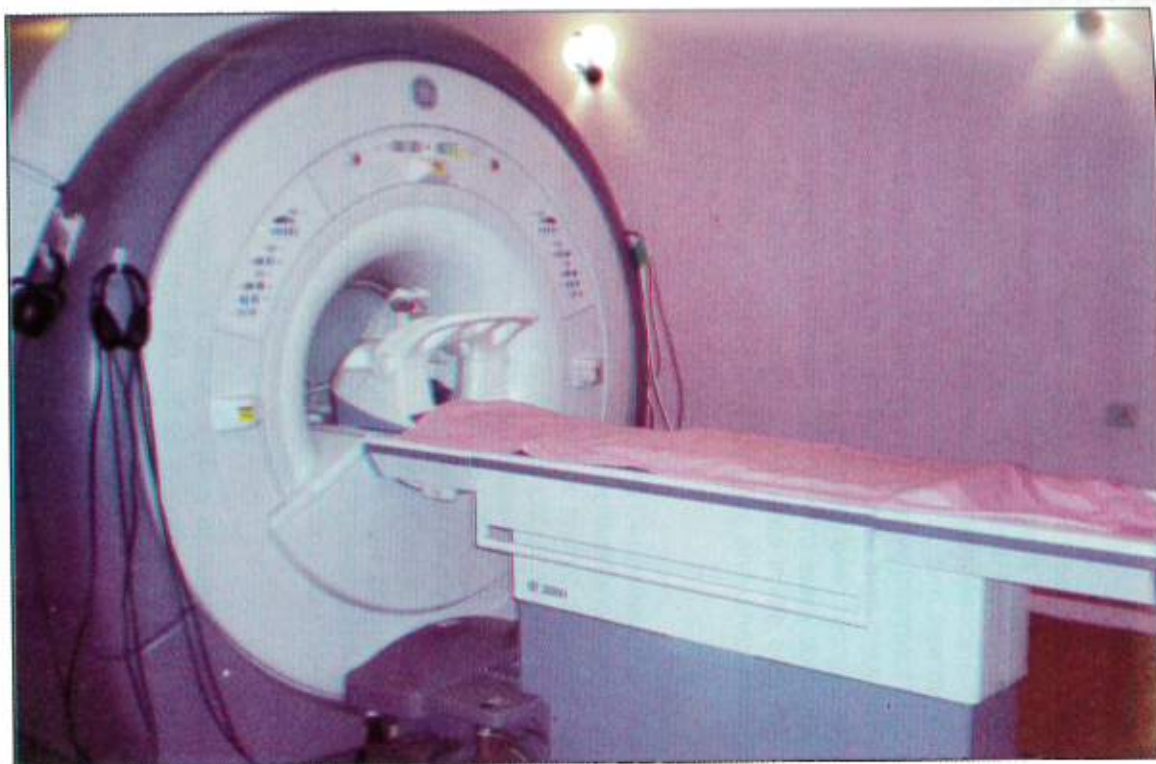
Paper presented: Jiji, V. 'Advanced imaging in oral cancers'.

**Dr. Sumod Mathew Koshy**

Investigators meeting, Hong Kong, China. February 2008.



*Dr. Anbumani Ramadoss, Hon'ble Union Minister for Health and Family Welfare, inaugurated the MRI Scanner on 24 November 2007.*



*MRI Scanner inaugurated on 24th November 2007*



## NUCLEAR MEDICINE

Dr. V.M. Pradeep      Additional Professor & Head  
Dr. A. Sreekumar      Associate Professor

### Description of Work

Nuclear Medicine division provides diagnostic and therapeutic facilities using open radioactive sources. The center attracts a large group of patients from various districts of Kerala, South Tamil Nadu, Karnataka as well as Male and Sri Lanka. The work in Nuclear Medicine division includes in-vitro assays, various types of scans, and treatment for Thyrotoxicosis and thyroid cancer as well as palliative treatment of bone pain. This is the only center in the state that provides high-dose therapy using radioactive sources. The division has also been recognized as a training centre for high dose therapy. The in-vitro assay section was the first of its kind to start functioning in the state in the early 1981. The division also participates in several teaching and other academic activities.

### Thyroid Clinic

The major part of the work of Nuclear Medicine Department comprised evaluation and treatment of Thyroid disorders. Facilities for comprehensive diagnostic and therapeutic options for various thyroid disorders were available. These included thyroid scanning, ultrasonography, in-vitro assays, and radioiodine therapy. 12798 cases attended the thyroid clinics as new cases with direct referrals as well as follow-up cases. These consist of Ca Thyroid and Thyrotoxicosis as well as other cases that were referred for various investigations such as thyroid function tests, thyroid uptake and scan. 298 thyroid ultrasound scans were also done. Thyroid scans were done with radioiodine (I-131), technetium (Tc99m). Large dose, whole body radioiodine scans were done for Ca Thyroid.

### Immunoassay

The Lison chemiluminescence assay system added to the existing counters now performs well over 20,000 assays per year. This year the number of assays increased by about 4000 compared with last year.

### Imaging-(Gamma Camera)

The acquisition of a Dual Head SPECT gamma camera (Infinia II GE) was the highlight of the year. Bone scanning for cancer patients was the

main work on this instrument. Dynamic renal studies including pediatric renal evaluation were the second most important. MIBI imaging has been done routinely. Technetium for the purpose of these scans is eluted from Molybdenum using Mo-Tc generator from BARC. Scanning for medullary Ca Thyroid using 99mTc(V)-DMSA is now a standard part of the workup.

#### Radionuclide therapy

Radionuclide therapy section of Nuclear Medicine is one of the largest in the country. Our Centre has recently been recognized by the Atomic Energy Regulatory Board as a training Centre for high dose treatment with pen radioactive sources. Radioiodine therapy is routinely given for Thyrotoxicosis and Ca Thyroid. The division has a full-fledged radionuclide therapy ward with day tank for the treatment of thyroid cancer. The division has facilities for bone pain palliation using 89-Sr and 153-Sm.

Treatment for Thyrotoxicosis	184
Treatment for Ca Thyroid	595

**Table 8: Investigations done**

Immunoassays	No.
T3	2472
T4	2688
TSH	3888
FT3	240
FT4	384
ATG	648
AMC	684
TG	3132
PTH	552
CALCITONIN	12
HCG	2004
AFP	1080
CEA	2244
CA-125	1944
PSA	792
FSH	12
LH	10

PRL	12
TESTO	20
CORTISOL	10
GH	32
B2MU	282
CA 19-9	672
<b>TOTAL</b>	<b>23814</b>

#### Gamma Camera

LD-SCAN	2567
SD-SCAN	285
PT	499
99mTc O4	788
BONE	2140
RENOGRAM	80
DMSA(Tumor)	48
DMSA(Kidney)	14
MUGA	22
Meckel's	3
MIBI(Tumor)	163
BIDA	9
<b>TOTAL</b>	<b>6618</b>

#### Merits, conferences attended, papers presented

Dr. Sreekumar A.

Examiner BSc. (NMT), Manipal University, Manipal. December 2007.

SNM (southern chapter annual meeting, Hyderabad. 28 – 29 July 2007.

5<sup>th</sup> Annual conference of ANMPI., Udaipur, Rajasthan. 28 – 30 September 2007.

Paper presented:

'Retrospective analysis of clinico-pathologic parameters of solitary nodule thyroid: our experience with 453 cases'.

## RADIATION PHYSICS

Dr. Raghu Ram K. Nair	Additional Professor & Head
Dr. Thayal Singh Elias	Associate Professor
Mr. Raghu Kumar P.	Assistant Professor
Mr. Saju B.	Assistant Professor
Mr. Giri Purushothaman	Lecturer-Electronics Engineering
Ms. Zhenia Gopalakrishnan	Lecturer
Ms. Divya K. T.	Lecturer

### Routine Activities

Calibration and Quality Assurance of Radiotherapy equipments  
 Treatment Planning  
 Dose Computation  
 Radiation Safety in Radiotherapy, Imageology and Nuclear Medicine.  
 Participation in Intercomparison and external verification of dose output of treatment machines using TLD in BARC/IAEA programs.  
 Daily maintenance, checking and repair of all teletherapy and brachytherapy equipment  
 Intraoperative, intraluminal and mould brachytherapy using Microselectron HDR  
 Installation, acceptance and QA of: (1) a new aSi Flat panel digital Simulator; (2) Isocentric C-Arm and Table for HDR Brachytherapy

**Table 9 : Patient Services:**

Treatment given:	No. of patients
External Beam Radiotherapy	7454
Brachytherapy	
Conventional	
Interstitial Implantation	17
Microselectron HDR	
Gynaec	1294
Oesophagus	52
Bronchus	3
Others	46
<b>Total</b>	<b>1395</b>
	<b>8849</b>

Simulator		3370
Mould Room		
Orfit Shell	1269	
Bite Block	605	
Wax Bolus	261	
Electron Cut-outs, Head rest, Leg rest, face rest, mould etc	382	2517

### Academic Activities

Classes were conducted in Medical Physics and practical training imparted to the following categories of students of:  
 Diploma in Radiological Technology (DRT), B.Sc. MLT; DMLT, B.Sc. Nursing, M.Sc. Nursing, MBBS, DMRT, DMRD, MDS(Orai Radiology), MD Radiotherapy, MD & Dip NB (Radiodiagnosis) and M.Sc Radiation Physics.

### Training Programme

The three months Refresher programme in Imageology/Nuclear Medicine and Radiotherapy for Radiographers started in 1994 has covered 132 Trainees in Imageology/Nuclear Medicine and 33 trainees in Radiotherapy till March 2008. Two Dip RP students from BARC, Mumbai attended two months training in 2007.

M.Sc. Radiation Physics Programme started in collaboration with Calicut University. Classes of third semester commenced in July 2007 with eight students.

### Ongoing Research Projects

1. HBRA Project, Karunagappally; Cancer occurrence in the Natural Radiation Area of Kerala (Funded by: Health Research Foundation, Kyoto)  
Principal Investigator: Dr. Raghuram K. Nair
2. Software development of Radiotherapy Management System.  
Principal Investigator: Dr. Thayal Singh Elias
3. Development of a latex packing balloon to reduce rectal and bladder dose in IC HDR Brachytherapy. (Funded by: Hindustan Latex)  
Principal Investigators: Dr. Raghuram K. Nair, Mr. Raghukumar P.

**Merits, Conference/meeting attended, papers presented**

**Dr. Raghu Ram K. Nair**

Examiner, MD (Radiodiagnosis) & DMRD, University of Kerala.  
Examiner, Ph D Thesis, Calicut University and Manipal University.  
Member, Board of studies in radiation physics, Calicut University.  
Research Supervision for the following Ph D programmes:

- a. Calibration, dosimetry and safety in brachytherapy techniques in the treatment of malignant diseases. Mr. P. Raghukumar, M.G. University, Kottayam.
- b. Development of a quality assurance protocol, dose measurement and radiation safety evaluation in CT Scanners. Mr. K. A. Davis, M.G. University, Kottayam.
- c. Modification of radiotherapy by physical parameters. Dr Sajeed A, University of Kerala.

CME on advances in medical imaging and interventional technology. Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram. 23 September 2007.

Paper presented: 'Recent Concepts in Radiation Protection'

**Dr. Raghu Ram K. Nair, Dr. Thayal Singh Elias, Mr. Raghukumar P., Mr. B. Saju**

Meeting of the Association of Medical Physicists of Kerala. 29 April 2007.

28<sup>th</sup> National Conference of the Association of Radiation Oncologists of India, Chennai. 29 November – 2 December 2007.

**Mr. Raghukumar P.**

Examiner, BSc (MRT), Mahatma Gandhi University, Kottayam.

Ph D scholar, M. G. University, Kottayam.

20<sup>th</sup> Kerala Science Congress, Thiruvananthapuram. 28 – 31 January 2007.

Paper presented: 'Development of a balloon for use in patients with cancer of the uterine cervix to reduce rectal and bladder doses'

**Mr. B. Saju**

Ph D Scholar, Calicut University.

17<sup>th</sup> National Symposium on Radiation Physics, Saha Institute of Nuclear Physics, Kolkata. 4 – 6 November 2007.

Papers presented: Saju B, Santhosh VS, Babu BRS, Reghu Kumar P, Raghu Ram K. Nair, Divya K.T., Zhenia G, Shajju. 'Design and

fabrication of Dosimetric Phantom for dosimetry'.

Santhosh V.S., Saju B, Sushama P, Babu B.R.S. 'Monte Carlo simulation and beam characteristic studies'.

Sushama P., Santhosh V.S., Saju B., Babu B.R.S. 'Dosimetric studies on carcinoma breast treatments'

**Mr. Giri Purushothaman**

8<sup>th</sup> National Conference on technological trends, College of Engineering, Thiruvananthapuram. 30 November – 1 December 2007.

**Mr. Rajesh P.R., Mr. Sunil Kumar S., Sreekala R.**

11<sup>th</sup> National Conference of Association of Radiation Therapy Technologists of India, All India Institute of Medical Sciences, New Delhi. 5 - 7 October 2007.

Paper / Poster presented: Rajesh P.R., Sajeed A, Raghu Ram K. Nair, Sunil Kumar S, Raghu Kumar, P., Jayaprakash P.G. 'HDR Vs. LDR brachytherapy in the treatment of carcinoma of uterine cervix'.

Sunil Kumar S., Raghu Ram K. Nair, Hariharani S., Purushottam G. Kale, Aswin kumar, Jayaprakash P.G., Ravindran Ankathil. 'Chromosome aberrations following radiotherapy in patients with cancer of uterine cervix'.

**Mr. Sunil Kumar S.**

20<sup>th</sup> Kerala Science Congress, Thiruvananthapuram. 28 - 31 January 2007.

## ANAESTHESIOLOGY

Dr. Rachel Cherian Koshy	Additional Professor and Head
Dr. Mary Thomas	Associate Professor
Dr. Venugopal A.	Associate Professor
Dr. Malika Balakrishnar	Assistant Professor
Dr. Sudha P.	Assistant Professor
Dr. Viji Pillai	Lecturer

The Department of Anaesthesiology runs 6 major and one minor theatre in addition to the pre anaesthetic clinic and anaesthesia in remote settings like endoscopy room, radiation suite and CT room.

Pre-anaesthetic evaluation is done 6 days a week. Anaesthetic service was provided for major cancer surgeries, minor procedures, diagnostic and therapeutic endoscopic procedures and central venous access in adults. Children requiring radiation, CT guided procedures and long term central venous access were also provided anaesthetics.

Round the clock coverage is provided for surgical emergencies. Intensive care and ventilatory support for post operative patients is also provided continuously. Acute pain service for post operative surgical patients is being provided for upto 72 hours after surgery by anaesthesiologists.

Dr Rachel Cherian Koshy was appointed as a visiting faculty at the Milton Hershey Medical Center and Penn State University in USA for six months.

Post graduate intake in this broad speciality department has been 4 per annum with no seat lying vacant for the third successive year

Two temporary lecturers were appointed to offset the existing staff shortage. Post graduate teaching was carried out 2-3 days a week and Dip NB appraisals were conducted periodically.

### CLINICAL WORK : SUMMARY

#### Pre-anaesthetic Assessment Clinic

No. of new cases seen	3196
No. of review cases seen	3310
<b>Total</b>	<b>6506</b>

#### Anaesthetics Administered

Major cases	2473
Minor cases	289
Endoscopies	43
<b>Total</b>	<b>2805</b>

#### Break up of major cases

Head and neck	982
Breast	832
Gastro-intestinal	286
Gynae-urology	235
Esophagus	60
Extremity	108
<b>Total</b>	<b>2473</b>

#### Special Techniques

TIVA	44
GA+EPIDURAL	391
Combined Spinal Epidural	143
Subarachnoid block	56
LMA	103
Plexus and other blocks	12
Anticipated difficult airway	85
Blind nasal intubation	20
Fiberoptic intubation	2
Retrograde intubation	3

#### Tracheostomy

Preop	10
Perop	21
Post op	18
<b>Total tracheostomies</b>	<b>49</b>

#### Ongoing Research Projects

1. A Comparison of ephedrine and ketamine in the prevention of hypotension following propofol induction.  
Investigators: Dr.Gopakumar, Dr. Venugopal
2. Effect of Isoflurane anaesthesia on prolongation of QTc interval in breast cancer patients pretreated with anthracycline

chemotherapeutic agents

Investigators: Dr.Rajasree.O, Dr.Venugopal A.

3. Comparison of Intravenous induction with propofol versus inhalational induction with sevoflurane: A prospective randomized control trial.  
Investigators: Dr.Divya John, Dr.Rachel Cherian Koshy
4. A Prospective double blind randomized controlled trial to study the efficacy of single dose pre-emptive Gabapentin to reduce post operative pain and opioid demand following head and neck surgery.  
Investigators: Dr. Preethy Elizabeth Benoy, Dr. Rachel Cherian Koshy
5. Randomised double blinded study of efficiency of pre-operative oral clonidine in prevention of haemodynamic response to laryngoscopy and tracheal intubation.  
Investigators: Dr.Sweetline Subha, Dr.Rachel Cherian Koshy
6. A prospective Double blind randomized control study to determine the efficacy of injection labetalol for controlled hypotension.  
Investigators: Dr. Padmakumar, Dr. Mary Thomas
7. Effect of small dose ketamine in prevention of pain on propofol injection.  
Investigators: Dr. Ranju, Dr. Mary Thomas
8. Comparison between intermittent bolus dose of epidural buprenorphine versus infusion of bupivacaine for postoperative pain management.  
Investigators: Dr.Rajesh Vijayan, Dr. Mary Thomas
9. Randomised double blind controlled trial to compare effectiveness of post op analgesia of fentanyl and morphine via patient controlled iv delivery.  
Investigators: Dr.Venu N, Dr. Mary Thomas

#### **Merits, conferences / meetings attended, talks delivered**

##### **Dr. Rachel Cherian Koshy**

Visiting appointment as Assistant Professor (Anesthesiology), Milton Hershey Medical Center and Penn State University, January – July 2007.

Hospital Management Certificate Course, National Institute of Health and Family Welfare, New Delhi. August 2007

Talks delivered: 'Head and Neck cancers: challenges for the Anaesthesiologist'.

(Department of Anaesthesiology, Milton Hershey Medical Center, Penn State University, Hershey, Pennsylvania . June 2007.)

'Advances in management of cancer pain'. (All India Radio, Trivandrum, September 2007)

##### **Dr. Rachel Cherian Koshy, Dr. Venugopal A.**

CME and 31<sup>st</sup> annual conference of Indian Society of Anaesthesiologists (Kerala chapter), Kozhikkode. 26 – 28 October 2007.

##### **Dr. Venugopal A., Dr. Mallika Balakrishnan, Dr. Sudha P.**

'Respiratory Care Update', Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram. 8 July 2007.

##### **Dr. Mallika Balakrishnan, Dr. Sudha P.**

CME on Pulmonary Critical Care Medicine, Department of Respiratory Medicine, Medical College, Thiruvananthapuram. 9 September 2007.

## CANCER RESEARCH

Dr. Prabha Balaram	Professor (on leave)
Dr. Ravindran Ankathil	Additional Professor (on leave)
Dr. S. Karman	Additional Professor
Dr. P. Remani	Additional Professor
Dr. K.M. Sathyan	Lecturer
Dr. S. Hariharan	Lecturer
Dr. T.T. Sreelekha	Scientific Officer

The academic activities of the Research Division during the period 2007 - 08 was mainly concentrated on translational research as well as designing of new research aspects in cellular and molecular oncology. The identification and characterization of biologically active plant products and its exploitation as antitumor agents were also areas of active research. Other important activities of the division included conducting training programmes like doctoral course; M.Sc./MD/MDS dissertation works; short-term training for B.Sc, M.Sc and B. Tech students. The foremost important outcome of the research work from each laboratory during the report period was as follows.

### Laboratory of Tumour Immunology and Functional Genomics

Group Leader                      Dr. Prabha Balaram

Modulation of immune functions using medicinal plant products as a possible therapeutic measure has become fundamental principles of therapeutic approach. Ayurvedic preparations were used in a big way for this purpose. Preliminary studies reported by us in mice and humans imply that *Indukantha Ghrita* an ayurvedic rasayana prescribed for treatment of a number of diseases and also as a rejuvenating agent in humans by the ayurveda physicians is an immunomodulating agent, preferably stimulating the TH1 type immune response. Presently we have been evaluating the effect of rasayana *Indukantha Ghrita* when given as an adjuvant to oral cancer patients after the completion of the primary treatment for the debulking of the tumour. Immune response was measured by evaluating the effect of IG administration to lymphocyte response to mitogen and alterations in the effector T-lymphocyte

population. As of now, immunomodulation using plant products have not been tried in cancer patients and this study will tell us the efficacy of an immunomodulating agent which has been used in ayurveda for many years and for which no particular side effect has been reported yet. If the drug is found as effective as was noticed in the experimental animals, it would give us a therapeutic mode with additional benefits and also show the benefits of activation of the immune system from various angles.

*Indukantha Ghrita* is a polyherbal preparation consisting of 17 plant components prescribed by Ayurvedic physicians for various ailments in India. The immunomodulatory/anti-tumor activity has not been documented scientifically for most plants in order to justify their inclusion in the drug. We evaluated the immunomodulatory/anti-tumor potential of major plants – *Aegle marmelos* (AM), *Piper longum* (PL) and *Piper chaba* (PC) and identified the fractions responsible for the activity. Results obtained were significant and comparable with standard anticancer drugs. Toxicity profiling in mice for all the three plant drugs including LD<sub>50</sub>, liver and renal function tests using serum and histopathology of organs were performed and the drugs were non-toxic to lymphocytes and upto 2g/kg doses. Fractions responsible for the activity were characterized using flash chromatography. GC/LC-MS, HPLC and the compounds such as ananthorhizol, piperidine, caryophyllene, nerolidol, elemene, fenchene, lindenmin were identified.

The tumor derived exosomes from some cancers have been demonstrated to suppress T cell function and induce apoptosis of T cells, thereby reducing the immune response of the patient resulting in defects in the growth control of the malignant cells. They could be responsible for a negative regulation of the signal transduction proteins in T-lymphocytes, which could lead to an impairment/enhancement of T cell function. Our results suggested that the role of circulating factors as immunosuppressants in oral cancer. Moreover, it was observed that serum from oral cancer patients exert strong immunomodulatory effects on T-lymphocytes, thereby affecting the overall immune responses. The immune regulatory effect was seen to be closely related to the clinical response of the patients and hence could be a potential marker of prognosis.

**Patient Service:**

Flow Cytometry - Immunophenotyping & Stem Cell Enumeration - 142 Cases

**Ongoing Doctoral Programme:****Research topics**

1. T-cell signal transduction in correlation with immune response and response to therapy in patients with cancer of the uterine cervix.
2. Molecular alterations in relation to radiation response in squamous cell carcinoma.
3. Analysis of molecular alterations of epidermal growth factor receptors in GTD.
4. Immunomodulatory activities of major plants used in the preparation of Indukantha Ghrita.

**Laboratory of Cytogenetics and Molecular Diagnostics**

Group Leader Dr. Ravindran Ankathil  
Lecturer Dr. S. Hariharan

The research areas concentrating by the Laboratory of Cytogenetics and Molecular Diagnostics are chromosome abnormalities seen leukemia patients, chromosome abnormalities seen in patients with genetic disorders and infertility, the identification of genetic susceptibility factors in familial and sporadic cancers, Mutation analysis of BRCA 2 gene. Susceptibility genes in lung cancer and mutation analysis of mismatch repair genes in colorectal cancer patients.

**Patient Service:**

1. Bone marrow chromosome analysis carried out for leukemia patients 419 samples
2. Peripheral blood lymphocyte, chromosome analysis carried out for patients referred from various other hospitals and genetic centres 78 samples
3. Pedigree analysis carried out in familial cancer patients 20 Nos.

**Ongoing Doctoral Programme:****Research topics**

1. Genetic susceptibility studies in lung cancer.
2. Molecular genetic analysis of germline BRCA2 gene mutations and pathobiology of BRCA2 gene mutated hereditary breast cancer.
3. Role of Germline polymorphism of few low penetrance genes in familial breast Cancer.
4. Genetics of colorectal cancer susceptibility.
5. Germline mutation analysis of mismatch repair genes in familial colorectal cancer patients.
6. Cytogenetic and Molecular cytogenetic analysis of AML patients.

**Laboratory of Cell cycle Regulation and Molecular Oncology**

Group Leader Dr. S. Kannan

The mandate of our lab has been to decipher the basic molecular mechanisms underlying oral cancer development thereby enabling better diagnosis and treatment of the disease. Cell cycle regulatory genes are frequently dysregulated in cancer. The analysis of the cell cycle revealed p53, p16 and cyclin D1 as good biomarkers for predicting prognosis in oral carcinoma. In our proteomic approach, we identified several proteins involved in the stabilization of p53 in oral carcinoma. Studies are underway to pinpoint each of these proteins. In addition, analysis of microsatellite markers showed that markers encompassing p16 gene are associated with oral cancer progression and disease recurrence. Currently we are also profiling cell cycle regulatory genes expression at the transcriptome level using TLDA. The preliminary results showed molecular expression profile efficiently classify a group of patients with poor survival. The preliminary studies on the insolvent of Micro RNA in oral carcinogenesis and its profiling using Micro array is also being started in the current year and this expected to provide molecular basis of oral carcinogenesis and development of new targets as well as prognostic biomarkers for its therapeutic management.

**Patient service**

RT-PCR for BCR-ABL fusion transcript - 64 patients  
RT-PCR for PML-RAR $\alpha$  fusion transcript - 17 patients  
Quantitative Real-Time PCR - 34 patients



#### Ongoing Doctoral Programme:

##### Research topics

1. Characterization of molecular alterations in p53 gene in oral carcinoma. (Thesis submitted)
2. Characterization of molecular alterations in INK4/MTS-1/p16 gene in oral carcinoma.
3. Molecular studies on involvement of p14/ARF Gene in oral carcinoma.
4. Characterization of molecular alterations in the Retinoblastoma (Rb) gene in Oral carcinoma.
5. Study on the identification of factor/s involved in over expression of cyclin D1 in oral carcinoma.
6. Studies on the biology of carcinoma of buccal mucosa and tongue.

#### Laboratory of Glycobiology and Phytopharmacology

Group Leader Dr. P. Remani

The need to find a safe and highly effective cure for neoplastic diseases remain a major challenge. Plants have been a source of medicine substances for thousands of years and phytoproducts continue to play an essential role in medicine. We focused our studies on three medicinal plants, *Solanum trilobatum* belonging to the family Solanaceae, *Alpinia galanga* and *Curcuma zedoaria* belonging to the family Zingiberaceae. The petroleum ether extract of all the three plants exhibited cytotoxic activity against K-562 (Leukemia) cells, A-549 (Lung cancer) cells and KB (nasopharyngeal) cancer cells. The active compounds were identified by Gas chromatography Mass Spectroscopy (GCMS). Acute toxicity studies were carried out in experimental animals and it was found that none of the extracts exhibited toxicity up to 500 mg/kg bodyweight on Balb/c mice. Further studies are in progress to evaluate the antitumour activity of the active principles of these plants.

#### Ongoing Doctoral Programme:

##### Research topics

1. Anti-tumour properties of selected medicinal plants of Zingiberaceae.
2. Cytochemical and immunological studies of Solanaceae plants.
3. Telomerase as tumour marker in oral cancer as an indicator for staging and treatment outcome.

4. Characterization and evaluation of anticancerous properties of compounds from selected medicinal plants.

#### Laboratory of stem cell biology

Group Leader Dr. K.M. Sathyan

We are interested in elucidating the basic biology of stem cells. The specific alterations that lead to the formation of cancer stem cells and differences in the biology of cancer stem cells and normal stem cell are the major focus. This may lead to development of new drugs, which could directly target cancer stem cells. We are also re-evaluating stem cell associated genes as prognostic biomarker in oral carcinoma.

#### Laboratory of Biopharmaceuticals

Group Leader Dr. T.T. Sreefekha

Drug development from natural products is an emerging area of medical research and polysaccharides from plant products have attracted significant attention in the recent time. Earlier studies on polysaccharide isolated from *Tamarindus indica* (PST001) exposed that it has an antiproliferative effect on tumor cells (lymphoid cells) affecting the mitotic progression. In vitro cytotoxicity experiments in solid tumor cell lines suggest that PST001 is a potential molecule against solid tumors. Apoptosis and mitotic inhibition were evident in PST001 treated cancer cells. Apart from apoptotic evaluation cell cycle and cell cycle check point proteins were also assessed and the results are supporting the above findings. Further studies are going on to appraise the potential of PST001 as an anticancer drug.

Another area of research in this laboratory was the evaluation of molecular alterations in carcinogenesis. Lung cancer is one of the most frequent malignancies in the worldwide and the leading cause of the death. An increased incidence of female lung cancer is observed in the RCC clinic. In this background, we have undertaken a project to investigate the genomic alterations in female lung cancer patients. Blood and bronchial lavage were collected from both male and female lung cancer patients to analyze genomic instability, mutational status of P53 & Ras genes, polymorphism of metabolic genes and the estrogen status in the sera in order to compare these parameters in male and female patients. Preliminary results showed that a significant correlation

between estrogen levels and lung cancer both in male and female patients. Further evaluation is going on to formulate a molecular model for lung carcinogenesis.

#### Ongoing Doctoral Programme:

##### Research topics

1. Characterization of anti-tumor polysaccharides from mushrooms.

##### Training offered

1. Three Months Training in Cytogenetics offered to Laboratory Technician, Priyadarshini Institute of Paramedical Sciences, Trivandrum.
2. Two Months Training in Immunology and Molecular Biological Techniques for MD Microbiology Students, Medical College, Trivandrum

#### External Students Training Programme

Division of Cancer Research has conducted various training and education programmes for graduates and postgraduate students during this period. Fifty two (52) M.Sc students from various Universities and Colleges were carried out their dissertations work. In addition, as a common endeavor to develop research aptitude among graduate and postgraduate students, the division also actively participated in training programme in "Cancer Research and Methodology". Under this scheme a total of 93 students got two week long observation training in various aspects of cancer research and also demonstrated various advanced techniques using for cancer research to the students. The division has also provided short term theory and practical training on cytogenetics to 144 BSc (MLT) students of MG University and 4 cytotechnologists/cytotechnician students of Division of Pathology, Regional Cancer Centre, Trivandrum.

#### Ongoing Research Projects

1. FIST grant for development of infrastructure (2004 -2009). (Funded by: Department of Science, Technology and Environment, Government of India)
2. Tumour suppressor genes in Nasopharyngeal carcinoma: an evaluation. (Funded by: Kerala State Council for Science, Technology and Environment)  
Principal Investigator: Dr. Prabha Balaram
3. Immunomodulation of T cell signal transduction by exosomes

from oral cancer patients. (Funded by: Kerala State Council for Science, Technology and Environment)

Principal Investigator: Dr. Prabha Balaram

4. Influence of Indukantha Ghitha - an ayurvedic rasayana on immune responses and prognosis in oral cancer patients: a feasibility study. (Funded by: Kerala State Council for Science, Technology and Environment)

Principal Investigator: Dr. Prabha Balaram

5. Polysaccharides from Tamarindus indica as inhibitors of mitotic progression in malignant cell lines: elucidation of the target protein. (Funded by: Kerala State Council for Science, Technology and Environment).

Principal Investigator: Dr. T. T. Sreelekha

6. Genomic instability in lung cancer as an early prediction tool. (Funded by: Department of Science & Technology, Government of India)

Principal Investigator: Dr. T. T. Sreelekha

7. Cytogenetic studies on the effects of chronic low-level radiation in the residents of high background radiation areas (HBRA) in Kerala, India. (Funded by: Health Research Foundation, Japan)

Principal Investigator: Dr. Ravindran Ankathil

8. Genetic Susceptibility Studies in Lung Cancer. (Funded by: Department of Science & Technology, Government of India)

Principal Investigator: Dr. Ravindran Ankathil

9. Mode of INK4A/MTS1 Inactivation and over expression of RB1 Genes in Oral Carcinoma. (Funded by: Department of Science & Technology, Government of India)

Principal Investigator: Dr. Kannan S.

10. Characterization of pathways involved in the upregulation of cyclin D1 expression in oral carcinoma. (Funded by: Kerala State Council for Science, Technology and Environment)

Principal Investigator: Dr. Kannan S.

11. Scheme Augmentation of R & D (SARD): Setting up of Real-Time PCR Facility. (Funded by: Kerala State Council for Science, Technology and Environment)

Principal Investigator: Dr. Kannan S.

12. Study on the Significance of Micro-RNA Expression Pattern in Oral Carcinoma. (Funded by: Department of Biotechnology, Government of India)

- Principal Investigator: Dr. Kannan S.
13. Cytotoxic and Immunological evaluation of active principles of two Solanaceae plants. (Funded by: District Development Office for Scheduled Castes, Thiruvananthapuram)  
Principal Investigator: Dr. P. Remani
  14. Antitumour properties of *Alpinia galanga*, a medicinal plant of Zingiberaceae. (Funded by: Indian Council of Medical Research, New Delhi)  
Principal Investigator: Dr. P. Remani
  15. Molecular dissection of TGF $\beta$ -Smad signaling pathway in oral carcinoma. (Funded by: Fast track grant for Young Scientists, Department of Science & Technology, Govt. of India)  
Principal Investigator: Dr. K.M. Sathyan

#### New equipments added to the facility

- |    |                              |   |      |
|----|------------------------------|---|------|
| 1. | Lyophiliser                  | - | 2007 |
| 2. | Microplate Spectrophotometer | - | 2008 |

#### Merits, Conferences / meetings attended, papers presented

##### Dr. P. Remani

Received 'Rotary Club Award for Excellent Achievement'.

##### Dr. P. Remani, Dr. T.T. Sreelekha

Workshop on quality improvement in Research, University of Kerala, Thiruvananthapuram. 28 – 29 September 2007.

##### Dr. Remani P., Mrs. Lakshmi S., Mrs. Dhanya GS, Mrs. Beena Joy, Mrs. Padmaja G.

International Conference on New Horizons in Biotechnology, Thiruvananthapuram. 26 – 29 November 2007.

##### Papers presented:

Lakshmi S., Dhanya GS., Beena Joy, Padmaja G., Remani P. 'Antitumour constituents from *Curcuma zedoaria* rhizomes'.

Beena Joy, Lakshmi S. 'Antiproliferative properties of *Embelia ribes*'.

Dhanya GS., Lakshmi S., Beena Joy., Remani P. 'In vitro cytotoxicity of *Solanum trilobatum* on cancer cells'.

##### Dr. Prabha Balaram, Dr. Remani P., Dr. T.T. Sreelekha, Mrs. Lakshmi S., Mrs. Dhanya GS, Mrs. Beena Joy, Mrs. Padmaja G., Mr. Aravind S.R.

2<sup>nd</sup> International Symposium on Translational Research on Natural Products and Cancer, Lonavala, Mumbai. 9 – 12 December 2007.

Papers presented: Lakshmi S., Dhanya GS., Beena Joy, Padmaja G., Remani. P. 'Inhibitory effect of an extract isolated from *Alpinia galanga* on Dalton's Lymphoma Ascites cells *in vitro*'.

Dhanya GS., Lakshmi S., Beena Joy, Remani. P. 'Cytotoxicity studies of *Solanum trilobatum* against Dalton's Lymphoma ascitic cells'.

Aravind.SR, Baby Prathap.B, Prabha Balaram, Sreeleka.TT. 'Studies on the antitumor activity of PST 001 on cancer cell lines'.

Baby Prathap.B, Aravind.SR, Prabha Balaram, Sreeleka.TT. 'Effect of Polysaccharide PST 001 in cell cycle regulatory proteins in cancer cell lines'.

##### Dr. T.T. Sreelekha

National Seminar on Medicinal Plants. University of Burdwan, West Bengal. 15 – 16 March 2008.

Papers presented: Suraj K. George, Praveena Krishnan, Sreelekha TT, Aravind SR., Sunil Kumar S., Sulekha B., Prabha Balaram.

'Evaluation of anti tumor activity of *Piper chaba* in a murine ascitic carcinoma'.

Praveena Krishnan.I., Suraj K. George, Aravind.SR, Sunil.KS, Cessal Thomas, Suresh Chandra Dutt, Sreelekha.TT, Prabha Balaram.

'Influence of indukantha ghrita: an ayurvedic rasayana on immune responses and prognosis in oral cancer patients'.

Aravind.SR, Praveena Krishnan I., Suraj K. George, Prabha Balaram, Sreeleka. TT. 'Antitumor Activity of the Polysaccharide PSP 001: an invitro evaluation'.

##### Dr. K.M. Sathyan

Awarded Ph.D. University of Kerala, 2007.

Topic: 'Characterization of molecular alterations in Cyclin D1 gene in oral Carcinoma'. (Guide: Dr. Kannan S.)

'Model Organisms and Stem Cells in Development and Disease'. National Centre for Biological Sciences, TIFR, Bangalore. February 2008.

Annual Meeting of Society for Biotechnologists, India and National symposium on current trends in stem cell biology, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram. 15 - 16 December 2007.

##### Dr. Kannan S., Dr. Sathyan K.M., Mr. Dileep Kumar U., Mr. Geo Francis, Mr. Deepak Roshan V.G.

27<sup>th</sup> Annual convention of the Indian Association for Cancer Research (IACR), The Gujarat Cancer & Research Institute, Ahmedabad, Gujarat. 7 – 9 February 2008.

Papers presented: Dileep Kumar U., Geo Francis, Sathyan KM, Nalinakumari KR, Rejnish Kumar R., Kannan S. 'A comprehensive analysis of p53 gene alterations in oral carcinoma'.

Deepak Roshan VG, Sathyan KM, Shaji Thomas, Paul Sebastian, Kannan S. 'Expression profiling of cell cycle regulating genes revealed molecular heterogeneity between buccal and tongue carcinoma'.

Sujathan K, Thara Somanadhan, Remani P. 'Evaluation of Bcl 2 and p53 expression in breast cancer patients: their significance in predicting axillary lymph node metastasis'.

**Mr. Praveen Kumar B.R., Mrs. Vijayalekshmi R.V., Dr. Hariharan S., Mrs. Sreeja L., Mrs. Santhi S., Dr. Ravindran Ankathil.**

20<sup>th</sup> Kerala Science Congress, Thiruvananthapuram. 28 – 31 January 2008.

Papers presented: Praveenkumar BR, Vijayaleskhami RV, Hariharan S., Sreeja L., Santhi S., Jayaprakash Madhavan, Raveendran Ankathil. 'The Intron Splice Acceptor Polymorphism (Ivs12-6T>C) in hMSH2 Gene and Risk of Colorectal Cancer'.

Suraj K. George, Sreekumar PK, Praveena Krishnan I., Geetha Parameswaran, Sulekha B., Prabha Balaram. 'Role of Zinc and Copper chelation in apoptosis mediated by Transition Metal Complexes'.

Syamala V, Kuttan R, Ravindran Ankathil. 'Mutation analysis of BRCA genes: a prospective strategy for early detection and better surveillance of breast/ovarian cancer patients'.

**Mr. Rajesh R.**

Awarded PhD, University of Kerala, 2008.

Topic: 'Immunomodulatory activities of Rasayana: Indukantha Ghrita in experimental animals'. (Guide: Dr. Prabha Balaram)

**Mrs. Sreeja L.**

Received Travel Grant for attending 12<sup>th</sup> World Lung Cancer Conference, Seoul, Korea. September 2007.

## MOLECULAR MEDICINE, DRUG DEVELOPMENT AND CHEMO-INFORMATICS

Dr. Lakshmi S. Lecturer

The Division of Molecular Medicine, Drug Development and Chemoinformatics was founded on the understanding that basic research in molecular and cellular biology is fundamentally important to the advancement of the medical sciences. The educational programmes of the division ranging from training graduate, post graduate and doctoral students involved a close participation of basic and clinical scientists in every step of the educational process. A goal of such a programme has been to train tomorrow's scientists to be better prepared to direct their basic molecular and cellular research toward issues of medical relevance. Importantly, molecular medicine trainees would also be more attuned to biomedical sciences, which could facilitate their recognition of clinically relevant findings arising through serendipity. The Division sought greater, more comprehensive understanding of human biology and disease, which formed the primary goal of biomedical research.

### Human Resource Development

This division has been an important training center in cell and molecular biology for postgraduate students from various colleges. This year 5 M Sc Biotechnology & Biochemistry and one MPhil Biotechnology theses were done in the division. A large number of graduate students in Life Sciences and Biotechnology also visited the division during the report year. One MD thesis was awarded this year.

### Ongoing Research Projects

1. Validation of p16 ink4a expression as a marker for oncogenic HPV infection in the uterine cervix. (Funded by: Kerala State Council for Science, Technology and Environment)  
Principal Investigator: Dr. Lakshmi S.
2. Expression levels of estrogen receptor cofactors in breast carcinoma. (Funded by: Indian Council for Medical Research, New Delhi)  
Principal Investigator: Dr. Lakshmi S.
3. Gene environment interaction and susceptibility to breast cancer. (Funded by: Department of Science and Technology, Government of India).  
Principal Investigator: Dr. Lakshmi S.

### Ongoing Doctoral Programmes:

#### Research topics

1. Role of estrogen receptor co-regulators in breast cancer.
2. Role of signal transducers and activators of transcription in breast carcinogenesis.

#### Conferences/meetings/workshops attended, papers presented.

##### Dr. Lakshmi S., Mr. Binu K. A., Ms. Prabha Pillai

Advances in computer aided drug discovery and design methods, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram. 20 – 22 August 2007.

Annual Meeting of Society for Biotechnologists, India and National symposium on current trends in stem cell biology, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram. 15 -16 December 2007.

##### Ms. Prabha Pillai

National Seminar on Bioactive Compounds from Marine Organisms, Cochin University of Science and Technology, Kochi. 14 – 15 March 2008.

#### Paper presented:

'Marine yeasts as source of immuno-stimulants for *Penaeus monodon*'.

## CANCER EPIDEMIOLOGY AND CLINICAL RESEARCH

Dr. Aleyamma Mathew	Additional Professor of Statistics and Epidemiology & Head
Mrs. Padmakumary Amma G	Lecturer in Biostatistics
Dr. Kalavathy M.C	Lecturer in Epidemiology
Dr. Preethi Sara George	Lecturer in Bio-Statistics (Oct. 2007 - )
Dr. Sajeevkumar N.K.	Lecturer in Bio-Statistics(Apr.-Oct. 2007)

The division runs cancer registries (hospital and population based), conducts surveillance and epidemiological studies as well as cancer control programmes, provides statistical analytical support to the research studies undertaken at RCC and teaches bio-statistics and epidemiologic methods to postgraduate students and professionals at RCC, conducts short term courses in Biostatistics & Epidemiology and guides students under the Kerala and Mahatma Gandhi universities for doctoral research programmes in Statistics and Epidemiology.

### I. Ongoing Research Projects

1. District Cancer Registry, Kollam. (Funded by: NCRP-ICMR, Bangalore)  
Principal Investigator: Dr. Aleyamma Mathew
2. Population Based Cancer Registry. (Funded by: NCRP-ICMR, Bangalore)  
Principal Investigator: Dr. Aleyamma Mathew
3. Development of an atlas of cancer in India. (Funded by: NCRP-ICMR, Bangalore)  
Principal Investigator: Dr. Aleyamma Mathew
4. Hospital Based Cancer Registry, Regional Cancer Centre, Thiruvananthapuram (Partially funded by: Indian Council of Medical Research, New Delhi).  
Principal Investigator: Dr. Aleyamma Mathew
5. Rural Cancer Registry, Thiruvananthapuram, Kazhakkuttam and Chirayinkil community development blocks. (Funded by: Finnish Cancer Society, Finland).  
Principal Investigator: Dr. Aleyamma Mathew
6. Thiruvananthapuram Corporation Cancer Control Programme. (Funded by: Thiruvananthapuram Corporation).  
Co-investigator: Dr. Kalavathy M.C.
7. Pattern of care and survival studies on cancers of cervix, female

breast and head and neck. (Funded by: Indian Council of Medical Research, New Delhi).

Co-investigator: Dr. Aleyamma Mathew

8. District Cancer Control Programme, Thiruvananthapuram (Funded by: NCCP, Government of India).

9. Feasibility study for a prospective life-style and dietary cohort in Thiruvananthapuram.

Part A: Logistics of conducting a cohort study;

Part B: Detailed characterization of the Indian diet and

Part C: Evaluation of follow-up and end-point ascertainment for conducting a cohort study.

(Funded by: National Cancer Institute, USA)

Principal Investigator: Dr. Aleyamma Mathew

10. Risk factors of Bladder & Kidney Cancers: A case-control study. Principal Investigator: Dr. Aleyamma Mathew.

11. Nutritional factors and risk of breast cancer: a case-control study.

Principal Investigator: Dr. Aleyamma Mathew.

## 2. Cancer statistics summary report of Hospital Cancer Registry (HBCR) of RCC (2006)

A total of 9441 cancer patients (4834 males and 4607 females) were reported in 2006. The commonest site of cancer was oral cavity (17.0%) and lung (12.2%) among males. In females, the commonest sites were breast (30.1%) and thyroid cancer (11.0%) (Tables 10-13).

**Table 10: Number (#) and relative proportion (%) of ten leading sites of cancer (Male) 2006**

ICD-10	Site	#	%	Rank
C00-06	Oral cavity	817	17.0	1
C09-10, C12-14	Pharynx	256	5.3	5
C15	Oesophagus	218	4.5	8
C16	Stomach	229	4.7	6
C32	Larynx	223	4.6	7
C33- C34	Lung	591	12.2	2
C70- C72	Brain & nervous system	168	3.5	9
C73	Thyroid	163	3.4	10

C81-C85 & C96	Lymphoma	284	5.9	4
C91- C95	Leukaemia	383	7.9	3
C00-C96	<b>Total</b>	<b>3332</b>	<b>66.9</b>	
	<b>All Sites</b>	<b>4834</b>		

**Table 11: Number (#) and proportion (%) of ten leading sites of cancer (Female) 2006**

ICD-10	Site	#	%	Rank
C00-08	Oral cavity	387	8.4	4
C33- C34	Lung	108	2.3	10
C50	Breast	1388	30.1	1
C53	Cervix uteri	473	10.3	3
C54	Corpus uteri	130	2.8	8
C56	Ovary	218	4.7	6
C70- C72	Brain & nervous system	114	2.5	9
C73	Thyroid	509	11.0	2
C81-C85 & C96	Lymphoma	155	3.4	7
C91- C95	Leukaemia	256	5.6	5
C00-C96	<b>Total</b>	<b>3736</b>	<b>81.1</b>	
	<b>All Sites</b>	<b>4607</b>		

**Table 12. System-wise distribution (%) of patients (2006)**

Male %		Female %
3.5	Brain & Nervous System	2.5
23.0	Oral Cavity & Pharynx	9.6
3.4	Thyroid	11.0
17.6	Respiratory System	3.0
0.2	Breast	30.1
9.2	Esophagus & Stomach	2.5
9.3	Other Digestive Organs	4.7



2.9	Urinary tract	0.8
4.3	Reproductive System	18.8
4.6	Bone, Conn.tissue & Skin	2.7
10.0	Leukemia & Myeloma	7.0
5.9	Lymphoma	3.4
6.2	All Others	4.0
Male :4834	Total : 9441	Female:4607

Table 13. Number & relative proportion of Cancer sites by gender (2006)

ICD-10	Site	Males		Females		Total	
		#	%	#	%	#	%
C00	Uvula	17	0.4	14	0.3	31	0.33
C01	Base of tongue	63	1.3	3	0.1	66	0.70
C02	Tongue	287	5.9	134	2.9	421	4.46
C03	Gum	97	2.0	71	1.5	168	1.78
C04	Floor of mouth	57	1.2	10	0.2	67	0.71
C05	Palate	54	1.1	12	0.3	66	0.7
C06	Other mouth	242	5.0	143	3.1	385	4.08
C07	Parotid gland	23	0.5	20	0.4	43	0.46
C08	Salivary gland	7	0.1	3	0.1	10	0.11
C09	Tonsil	35	0.7	4	0.1	39	0.41
C10	Oropharynx	93	1.9	5	0.1	98	1.04
C11	Nasopharynx	37	0.8	13	0.3	50	0.53
C12	Pyriform sinus	67	1.4	7	0.2	74	0.78
C13	Hypopharynx	60	1.2	24	0.5	84	0.89
C14	Pharynx unspecified	4	0.1	0	0.0	4	0.04
C15	Oesophagus	278	4.5	61	1.3	339	3.56
C16	Stomach	229	4.7	52	1.1	281	2.98
C17	Small intestine	12	0.2	6	0.1	18	0.19
C18	Colon	73	1.5	39	0.8	112	1.19
C19	Rectosigmoid colon	20	0.4	8	0.2	28	0.30
C20	Rectum	137	2.8	90	2.0	227	2.40
C21	Anus & anal canal	12	0.2	8	0.1	19	0.19
C22	Liver	109	2.3	21	0.5	130	1.38

C23	Gall bladder	9	0.2	9	0.2	18	0.19
C24	Other biliary tract	12	0.2	5	0.1	17	0.18
C25	Pancreas	64	1.3	34	0.7	98	1.04
C26	Other digestive organs	1	0.0	0	0.0	1	0.01
C30	Nasal cavity	10	0.2	3	0.1	13	0.14
C31	Accessory sinus	24	0.5	12	0.3	36	0.38
C32	Larynx	223	4.6	9	0.2	232	2.46
C33	Trachea	1	0.0	1	0.0	2	0.02
C34	Lung	590	12.2	107	2.3	697	7.38
C37	Thymus	1	0.0	0	0.0	1	0.01
C38	Heart & mediastinum	3	0.1	5	0.1	8	0.08
C40	Bone of limbs	43	1.0	23	0.5	66	0.70
C41	Other bone	18	0.4	7	0.2	25	0.26
C43	Skin melanoma	20	0.4	17	0.4	37	0.39
C44	Skin other	70	1.4	34	0.7	104	1.10
C47	Peripheral nervous system	1	0.0	0	0.0	1	0.01
C48	Retroperitoneum	14	0.3	6	0.1	20	0.21
C49	Connective tissue	68	1.4	45	1.0	113	1.20
C50	Breast	8	0.2	1386	30.1	1394	14.80
C51	Vulva			14	0.3	14	0.15
C52	Vagina			15	0.3	15	0.16
C53	Cervix uteri			473	10.3	473	5.01
C54	Body uterus			130	2.8	130	1.38
C55	Uterus unspecified			9	0.2	9	0.10
C56	Ovary			218	4.7	218	2.31
C57	Other genital organ			5	0.1	5	0.05
C58	Placenta			1	0.0	1	0.01
C60	Penis	34	0.7			34	0.36
C61	Prostate	143	3.0			143	1.51
C62	Testis	28	0.6			28	0.30
C63	Other genital organs	3	0.1			3	0.03
C64	Kidney	53	1.1	22	0.5	75	0.79
C65	Renal pelvis	1	0.0	0	0.0	1	0.01
C66	Ureter	1	0.0	1	0.0	2	0.02
C67	Urinary bladder	87	1.8	13	0.3	100	1.06
C69	Eye	5	0.1	5	0.1	10	0.11
C71	Brain	160	3.3	112	2.4	272	2.88
C72	Spinal cord	8	0.2	2	0.0	10	0.11

C73	Thyroid gland	163	3.4	508	11.0	672	7.12
C74	Adrenal gland	11	2.2	9	0.2	20	0.21
C75	Other endocrine gland	2	0.3	3	0.1	5	0.05
C76	Ill defined sites	0	0.0	1	0.0	1	0.01
C77	Secondary lymphnode	110	2.3	34	0.7	144	1.53
C78	Secondary respiratory & digestive	35	0.7	43	0.9	78	0.83
C79	Secondary other sites	49	1.0	35	0.8	84	0.89
C80	Primary unknown	48	0.9	28	0.6	69	0.73
C81	Hodgkins disease	64	1.3	41	0.9	105	1.11
C82	Follicular NHL	32	0.7	26	0.5	58	0.61
C83	Diffuse NHL	134	2.8	63	1.4	197	2.09
C84	T-cell lymphoma	20	0.4	8	0.2	28	0.31
C85	Other NHL	28	0.6	11	0.2	39	0.41
C90	Multiple myeloma	98	2.0	67	1.5	165	1.75
C91	Leukemia, lymphoid	162	3.4	97	2.1	259	2.74
C92	Leukemia, myeloid	173	3.6	111	2.4	284	3.01
C93	Leukemia, monocytic	23	0.5	30	0.7	53	0.56
C94	Other specified leukemia	2	0.0	0	0.0	2	0.02
C95	Leukemia unspecified	23	0.5	18	0.4	41	0.43
C96	Other lymphoid neoplasm	5	0.1	5	0.1	11	0.12
	All sites	4834	100.0	4607	100.0	9441	100.00

### 3. Population Based Cancer Registry (PBCR),

#### Thiruvananthapuram Taluk (2005)

The PBCR provided data on cancer incidence and mortality covering a population of nearly 1.1 million in the Thiruvananthapuram Corporation (urban population) and adjoining 10 panchayats (rural population). The ten leading cancer sites in the Thiruvananthapuram taluk are given in

Tables 14 & 15.

Table 14: Leading cancer sites: Thiruvananthapuram Taluk - Urban (2005)

Rank	Male (n=429)			Female (n=457)		
	ICD-10	Site	# (%)	ICD-10	Site	# (%)
1	C00-06	Oral cavity	56 (13.05)	C50	Breast	186 (35.5)
2	C33-34	Lung	45 (10.72)	C53	Cervix uteri	38 (8.1)
3	C61	Prostate	29 (6.76)	C00-06	Oral cavity	29 (6.2)
4	C32	Larynx	25 (5.83)	C73	Thyroid	27 (5.5)

5	C9, 10, 12-14	Pharynx	22 (5.13)	C56	Ovary	21 (4.5)
6	C81-C85	Leukemia	18 (4.20)	C64	Corpus uteri	18 (3.9)
7	C16	Stomach	15 (3.50)	C33-34	Lung	13 (2.8)
8	C81-C85, C96	Lymphoma	15 (3.50)	C81-85, C96	Lymphoma	12 (2.5)
9	C15	Esophagus	14 (3.26)	C70-C72	Brain & nerves	11 (2.4)
10	C70-C72	Brain & nerves	13 (3.03)	C81-C95	Leukemia	10 (2.1)

Table 15: Leading cancer sites: Thiruvananthapuram Taluk -Rural (2005)

Rank	Male (n=179)			Female (n=187)		
	ICD-10	Site	# (%)	ICD-10	Site	# (%)
1	C81-C85, C96	Lymphoma	27 (15.1)	C50	Breast	50 (26.7)
2	C33-34	Lung	26 (14.5)	C53	Cervix uteri	26 (13.9)
3	C00-06	Oral cavity	22 (12.3)	C00-06	Oral cavity	14 (7.5)
4	C9, 10, 12-14	Pharynx	10 (5.6)	C73	Thyroid	11 (5.9)
5	C16	Stomach	9 (5.0)	C81-C85	Leukemia	9 (4.8)
6	C70-C72	Brain & nerves	9 (5.0)	C56	Ovary	8 (4.3)
7	C15	Esophagus	8 (4.5)	C81-C85, C96	Lymphoma	7 (3.7)
8	C32	Larynx	7 (3.9)	C64	Corpus uteri	4 (2.1)
9	C81-C85	Leukemia	6 (3.4)	C33-34	Lung	2 (1.1)
10	C61	Prostate	4 (2.2)	C70-C72	Brain & nerves	2 (1.1)

### 4. District Cancer Registry, Thiruvananthapuram

The district cancer registry, Thiruvananthapuram is implemented to evaluate the District Cancer Control Programme (DCCP), Thiruvananthapuram. The cancer registration area covers the entire Thiruvananthapuram district. The total population of the district is more than 32 lakhs (34% urban & 66% rural). An active case finding methodology was adopted for recording cancer cases in Thiruvananthapuram district

by visiting the hospitals, laboratories and death registration offices in the entire district and record the necessary information using a standard proforma. All cases diagnosed from January 2005 onwards were collected for estimating annual cancer incidence and mortality rates.

### 5. Thiruvananthapuram Corporation Cancer Control Programme

Cancer awareness classes and cancer detection camps in the above area were conducted regularly. Conducted 19 cancer awareness and early detection training programmes for health workers and 19 awareness programmes for common public. House-to-house visits were conducted by the trained volunteers and they had motivated (Table 16).

Table 16. Cancer detection camps in Thiruvananthapuram Corporation

Sl No	Place & Date	Breast cancer screening		Cervical cancer screening			Oral cancer screening		
		Screened	Ca.	Screened	Pre-cancers	Ca.	Screened	Pre-cancers	Ca.
1	Sasthamangalam 05/04/07	290	1	25	0	0	290	6	0
2	Narom 22/04/07	130	0	20	0	0	130	4	1
3	Kuravankulam 12/05/07	125	0	28	4	0	125	3	0
4	Poojappura 27/05/07	146	0	25	1	0	146	4	0
5	Pallichal 09/06/07	215	1	45	0	1	215	6	1
6	Patton 24/06/07	202	0	38	0	0	202	3	0
7	Kannanthura 27/07/07	290	1	23	2	0	290	13	2
8	Valiyathura 29/07/07	212	0	65	6	0	212	15	1
9	Azilpra 15/08/07	53	0	19	3	0	53	0	0
10	Poonthura 19/08/07	171	1	17	1	0	171	17	2
11	Poonthura 30/08/07	210	0	26	3	1	210	18	1
12	Patton 02/09/07	93	0	26	0	0	93	2	0
13	Ahayera 13/09/07	130	0	32	2	1	130	4	0
14	Katakampally 14/10/07	90	0	26	1	0	90	4	1

15	Nalanchira 10/11/07	124	1	43	2	1	124	3	0
16	Muttaca 25/11/07	131	0	30	1	0	131	2	0
17	Jegathy 15/12/07	33	0	16	0	0	33	3	0
18	Thrikkannapuram 20/12/07	82	1	19	0	0	82	2	1
19	Karimatom colony 22/12/07	32	0	20	1	1	32	0	0
20	Valiyasala 30/12/07	211	0	46	0	1	211	8	2
21	Kalady 17/01/08	39	0	16	0	0	39	0	0
22	Poonkulam 18/10/07	38	0	38	0	0	38	0	0
23	Poundukadavu 20/01/08	225	1	48	2	1	225	3	1
24	Pappanamcode 09/02/08	188	0	42	1	0	188	2	0
25	Karumom 10/02/08	154	1	31	0	0	154	3	0
26	Pongumoodu 24/02/08	29	0	08	1	0	29	1	0
27	GH Perorkkada 01/03/08	86	0	46	1	1	86	1	0
28	Patton 02/03/08	98	1	14	0	0	98	0	0
29	Pappanamcode 30/03/08	78	0	31	0	0	78	2	0

### 5a. Papsmear Screening Programme in a Peripheral hospital:

Cervical cancer screening is being conducted twice a week in a peripheral government hospital in Thiruvananthapuram Corporation (Women & Children Hospital, Thycaudu). A total of 1285 Pap-smears were collected from the above hospital during the period under reported. A total of 8 high-grade squamous intra-epithelial lesions were obtained.

### 6. District Cancer Control Programme, Thiruvananthapuram (also include Kollam & Pathanamthitta districts) : summary of the report (2007-2008)

During the period under report, a total of 284 medical/dental doctors, 9275 health workers/ volunteers and 2262 High School students from the districts of Thiruvananthapuram, Kollam and Pathanamthitta were

trained under this programme. A total of 114 cancer detection camps (93 in Thiruvananthapuram and 21 in Kollam) were conducted. A total of 235 cancer cases were obtained from the above three districts through cancer detection camps/ early cancer detection clinics.

In Thiruvananthapuram district, 6647 men and women were screened for oral cancer (69 oral cancer cases, 262 pre-cancerous lesions of oral cavity (mainly include leukoplakia and submucous fibrosis)), 6820 women were screened for breast cancer (67 breast cancer cases, 743 benign breast lesions (include fibroadenoma, fibrocystic disease and fibroadenosis)), and 5773 women were screened for cervix cancer (24 cervix cancer cases and 430 pre-cancerous lesions of cervix (low and high-grade squamous intra-epithelial lesions, atypical squamous cells [ASCUS]) and a total of 10 other cancer sites were detected during the period under report. In Kollam district, 5113 men and women were screened for oral cancer (20 oral cancer cases, 222 pre-cancerous lesions of oral cavity), 664 women were screened for breast cancer (21 breast cancer cases, 131 benign breast lesions) and 4243 women were screened for cervix cancer (9 cervix cancer cases and 140 pre-cancerous lesions of cervix during the period under report. In Pathanamthitta district, 58 men and women were screened for oral cancer (4 oral cancer cases, 17 pre-cancerous lesions of oral cavity), 57 women were screened for breast cancer (5 breast cancer cases, 22 benign breast lesions), and 40 women were screened for cervix cancer (6 cervix cancer cases and 20 pre-cancerous lesions of cervix at the Regional Cancer Centre, Thiruvananthapuram during the period under report.

#### 7. Cancer Registry Reports published

- i. Hospital Based Cancer Registry, Regional Cancer Centre, Thiruvananthapuram, Annual Report for the year 2005, Published in August 2007.
- ii. Population Based Cancer Registry Regional Cancer Centre, Thiruvananthapuram, Annual Report for the year 2005, Published in October 2007.

#### 8. Ongoing doctoral programmes

##### Research Topics

1. Risk factors of breast cancer: A multivariate analysis.
2. Risk estimates of bladder cancer: multiple logistic regression model.
3. Risk factors of kidney cancer: a matched case control study.

#### 4. Performance status and quality of life of ovarian cancer patients

##### Merits, conferences/workshops attended, papers presented, talks delivered

###### Dr. Aleyamma Mathew

Chairman, MSc. Bio-statistics Core-Committee, Mahatma Gandhi University, Kottayam.

Research Guide in Epidemiology, University of Kerala, Trivandrum.

Research Guide in Epidemiology, Mahatma Gandhi University, Kottayam.

External Examiner and dissertation referee in MSc Bio-statistics, Mahatma Gandhi University, Kottayam.

Ph D thesis examiner, International Institute for Population Sciences (Deemed university), Mumbai.

Reviewer, Indian Journal of Cancer, World Journal of Surgical Oncology, Journal of Gastro Enterology & Hepatology and Statistics in Medicine.

Member, Doctoral Advisory Committee, Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram.

###### Dr. Aleyamma Mathew, Dr. Preethi Sara George

10<sup>th</sup> Annual Conference of the Society of Statistics, Computer and Applications, St. Thomas College, Pala, Kottayam. 16 - 18 November 2007.

Invited talk: Aleyamma Mathew. 'Time-trend and age-period-cohort modeling of breast cancer incidence in Trivandrum'.

Preethi Sara George. 'Extension of Cox Proportional Hazard Models'. 25<sup>th</sup> Annual National conference of Indian Society of Medical Statistics (ISMS), Manipal University. 29 November- 1 December 2007.

Paper presented: Aleyamma Mathew. 'Time trend and age - period-cohort modeling of cervix cancer incidence in Trivandrum'.

Preethi Sara George. 'Some statistical models on recurrent data'.

###### Dr. Aleyamma Mathew, Dr. Kalavathy M.C.

National Conference on 'Emerging Issues in Public Health'. Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram. 11 - 13 January 2008.

Papers presented: Aleyamma Mathew. 'Physical activity and anthropometric factors and breast cancer risk: a case-control study in south India'.

Kalavathy, M.C. 'Papsmear findings among pre and post-menopausal women attending a maternity hospital: a comparative study'.

## COMMUNITY ONCOLOGY

Dr. Ramani S. Wesley	Professor & Head
Dr. Gigi Thomas	Associate Professor
Dr. R. Jayakrishnan	Lecturer
Mr. C. Sreekumar	Social Investigator Gr.I

The major activities of this division were centered around human resource development, primary and secondary prevention of common cancers through cancer education and detection camps and early detection clinic functioning in RCC.

### Human Resource Development

- Trainer Trainee Programmes** : Through 80 programmes, 7830 trainers were educated as given in Table 17.
- Cancer Awareness**: Through 87 cancer education programmes 8274 persons were trained using LCD projection of slides
- International School of Colposcopy**: Through video conferences 242 gynecologists were trained in colposcopy, cryotherapy, LEEP, VIA, VILI. 26 gynecologists were given one week hands on training at RCC. 30 general practitioners, 510 nurses, 24 health workers and 102 paramedicals were given one day orientation programme at RCC.

Table 17: Details of Trainer Trainee programmes

Sl. No	Categories	No. of programmes	No. trained
1.	Nurses	13	510
2.	Doctors – Modern Medicine	2	200
	Doctors-Homeopathy	1	175
3.	Dentists/Dental Students	2	170
4.	Community Volunteers	2	264
5.	Paramedicals(BSc MLT)	6	102
6.	Health Supervisors and workers	1	74
7.	Student representatives & teachers	32	3361
8.	Bank/Factory/ Technopark/VSSC	5	1106
9.	Laypublic and NGOs	13	1894
10.	Tribal volunteers	4	149
	<b>Total</b>	<b>80</b>	<b>7830</b>



Seminar held on 'National Cancer Awareness Day' (7 November 2007)



## **2. Generation and distribution of health education materials**

a) 30 slides, photo albums on oral precancers, oral cancers and colposcopy were prepared for training. The health education materials generated during previous years were distributed among community volunteers and other target groups.

## **b) Training Manuals, Modules and Atlas**

In connection with the National Cancer Awareness Day on November 7<sup>th</sup> 2007, a workshop on oral premalignancies and cancers was conducted in which 135 dental professionals participated. A training manual was prepared for training the doctors and dentists in early detection of precancerous lesions, benign lesions and cancers of oral cavity. Two articles in magazines were brought out.

## **3. Exhibitions**

Fifteen exhibitions were conducted which were viewed by about three lakh people, the majority of whom were lay public, school teachers and students.

## **4. Health Mela**

We have participated in health melas by conducting camps, distributing pamphlets, creating awareness through LCD projection and showing CD's with documentary.

## **5. Antitobacco programmes and campaigns**

On May 31<sup>st</sup> 2007, in collaboration with IMA Trivandrum Branch and Regional Cancer Association, an open forum was organised in connection with World No Tobacco Day based on the current year's theme "Tobacco Free Youth". The Minister for Law and Parliamentary Affairs, Shri.M.Vijayakumar had inaugurated the function at Regional Cancer Centre. The minister also inaugurated a new movement titled "Strategic Movement Against Rising Tobacco Threat" (SMART) during the function. After the inaugural function, a play on tobacco hazards was conducted by the students of Loyola College, Trivandrum followed by a magic show by Sri.Abhin.Raj. In continuation to the observance of World No Tobacco Day, 73 programmes were conducted in different parts of Kerala State through which 6350 persons were given awareness on tobacco hazards.



## 6. Conduct of clinics

**a) Early cancer detection clinic** A total of 3123 persons with warning signals of cancer were evaluated. A total of 99 oral cancers, 52 breast cancers, 20 cervical cancers and 64 other cancers were detected, 366 oral precancerous lesions and 490 benign lesions of the breast and 102 cervical precancers were detected and kept under surveillance during this year.

**b) Dysplasia clinic** Out of 366 cases of oral precancers, there were 184 leukoplakia, 182 Oral Sub Mucous Fibrosis and 236 patients had other benign oral lesions. Patients having Leukoplakia were treated by chemoprevention or by excision. Precancerous conditions like Oral Sub mucous Fibrosis and Erosive Lichen Planus were given medication and kept under close follow up.

**c) Colposcopy clinic** 1886 colposcopies, 250 colpo directed biopsies, 1815 papsmears, 81 LEEP diathermic excisions and 2 cryotherapies were done for cervical precancers. 165 Low grade lesions, 39 high grade lesions (CIN 2&3) and 26 invasive cancers were detected through this clinic.

**d) Breast screening clinic** Propagation of breast self examination and clinical evaluation of breast disease and referral for mammography were done for 542 patients.

**e) Tobacco Cessation Clinic** In the current year 275 patients had undergone treatment in the Tobacco Cessation Clinic. Among the tobacco habitués, 81% were smokers, 12% were tobacco chewers and 7% had both the habits. They were given behavioral counseling and for patients with severe nicotine dependence, Nicotine Replacement Therapy was also given.

## 7. District Cancer Control Programme(DCCP)

The District Cancer Control Programme was started in April 2006 by the division of Cancer Epidemiology and Community Oncology. During this academic year, 62 cancer and anti tobacco awareness programmes were conducted for DCCP in Trivandrum and Kollam districts. Under the DCCP, 5445 subjects were screened last year. 32 cancer cases and 731 precancer cases were detected through community based screening programmes.

## 8. Peripheral Early Cancer Detection Programmes through ECDCs, and Village level comprehensive cancer control programmes

**Early Cancer Detection Clinics (ECDC):** The peripheral centres and nodal centres were referring patients with precancers and cancers to the ECDC of RCC for confirmation of diagnosis, colposcopy, LEEP, cryotherapy etc. Technical guidance and assistance were also given for the nodal centres of RCC. The main stay of peripheral cancer detection programmes was through 78 cancer detection camps through which 8650 people were screened. 36 oral cancers, 12 breast cancers, 20 cervical cancers and 4 cancers of other sites were detected. 252 oral precancers, 180 cervical precancers and 192 other precancers were detected. A weekly cervical cancer detection clinic was conducted at Mangalapuram for the women residing in the control area of Breast Cancer Screening project. Out of 318 women screened, 29 cervical precancers were detected.

## Ongoing Research Projects

1. Evaluation of early detection of cervical cancer precursors by Visual Inspection with Lugol's Iodine (VILI), Visual Inspection with Acetic Acid (VIA) and magnified VIA (VIAM) in Kerala, India. (Funded by: IARC and Bill Gate Foundation through ACCP)  
Principal Investigator: Dr. Ramani S. Wesley
2. Evaluation of 3 treatment methods (Cryotherapy, Loop Electrosurgical Excision Procedure (LEEP) in the management of precancers of cervix. (Funded by: IARC and Bill Gate Foundation through ACCP.)  
Principal Investigator: Dr. Ramani S. Wesley
3. Satellite training centre for training health professionals in colposcopy, visual screening strategies, cryotherapy. (Funded by: IARC and Bill Gate Foundation through ACCP.)  
Principal Investigator: Dr. Ramani S. Wesley
4. Cervical cancer screening using VIA, VILI for women in the control area of Trivandrum Breast Cancer Screening Project. (Funded by: IARC, France)  
Principal Investigator: Dr. Ramani S. Wesley
5. A Multi Centre Phase II Randomised Double – Blind Placebo controlled chemo prevention study to determine the clinical efficacy

and safety of Curcumin in Oral Premalignant Lesions. (Funded by: Department of Biotechnology, Government of India)

Co-investigator: Dr. Gigi Thomas

6. Randomised controlled trial of oral cancer screening by mouth examination in Kerala, India. (Funded by: International Agency for Research on Cancer, France)

Co-investigator: Dr. Gigi Thomas

7. Estimation tobacco attributable mortality in Kerala, India. (Funded by: International Agency for Research on Cancer, France)

Co-investigator: Dr. Gigi Thomas

8. Organisation of a community-based cluster randomized controlled trial for the early detection of Breast Cancer, Thiruvananthapuram District. (Funded by: International Agency for Research on Cancer, France)

Co-investigator: Dr. Gigi Thomas

9. District Cancer Control Programme, Thiruvananthapuram. (Funded by: Ministry of Health & Family Welfare, Government of India)

Co-investigator: Dr. Gigi Thomas

10. Tobacco Cessation Centre Project. (Funded by: WHO Regional Office, New Delhi)

Principal Investigator: Dr. R. Jayakrishnan

11. Tobacco awareness programmes among high school / higher secondary school students of Pathanamthitta, Kerala State. (Funded by: District Cancer Centre Society, Kozhanchery)

Principal Investigator: Dr. R. Jayakrishnan

TABLE 18. DETAILS OF CANCER DETECTION CAMPS

Sl. No.	Date	Place	Organized through	Total Screened	Cancers		Precancers	
					Oral	Others	Oral	Cervical
1	13/4/07	Vattiyookavu	DCCP	54	-	0	1	4
2	20/4/07	Vazhuthacaud	DCCP	132	-	-	5	3
3	21/4/07	Venpakal	DCCP	60	-	4	4	1
4	23/4/07	Poojappura	Hindusthan Latex	105	-	0	2	7
5	25/4/07	Pangappara	DCCP	48	-	1	3	1

6	30/4/07	Arattupuzha	Kayamkulam Panchayath	122	2	-	15	3
7	1/5/07	Puthenthope	DCCP	88	-	-	-	2
8	2/5/07	Vithura	DCCP	52	3	-	3	-
9	26/5/07	Venpakal	DCCP	54	-	-	6	1
10	28/5/07	Poonchura	DCCP	145	-	-	15	2
11	3/5/07	Puthukurichi	DCCP	111	1	-	3	3
12	23/6/07	Peringaloor	Marthoma Sevika Sangham	230	1	-	4	3
13	25/6/07	Peringammala	DCCP	38	1	1	-	-
14	4/7/07	Vellarad	Tharkamma Memorial Samskarika Samithi	98	1	-	3	2
15	7/7/07	Puthukurichi	DCCP	82	1	1	3	2
16	11/7/07	Chitharaa	Chithara Panchayath	134	1	-	8	8
17	13/7/07	Perumpazhuthoor	DCCP	33	-	-	1	-
18	14/7/07	Venpakal	DCCP	38	1	-	3	1
19	25/7/07	Balaramapuram	DCCP	119	-	-	-	6
20	27/7/07	Palakkad	Tribal Project	108	-	2	10	2
21	28/7/07	Palakkad	Tribal Project	70	-	-	4	1
22	28/7/07	Maayinkil	DCCP	13	-	-	-	-
23	30/7/07	Palakkad	Tribal Project	91	2	-	7	3
24	4/8/07	Kachari	DCCP	186	-	-	4	4
25	6/8/07	Neyyadam	Marthoma Sevika Sangham	110	-	-	2	6
26	15/9/07	Vamanapuram	DCCP	55	-	-	2	-
27	19/9/07	Vellarada	DCCP	14	-	-	-	1
28	28/9/07	Adichanalloor	Adichanalloor Panchayath	37	-	-	-	-
29	28/9/07 to 1/10/07	Palakkad	Tribal Project	189	-	-	8	2
30	8/10/07	Aruvikkalra	DCCP	137	-	-	3	3
31	15/10/07	Nedumangad	DCCP	119	-	-	7	4

32	17/10/07	Akkulam	Airforce	126	2	-	2	14
33	19/10/07	Manamboof CHC	DCCP	78	-	-	10	4
34	22/10/07	Akkulam	Airforce	85	-	-	1	2
35	24/10/07	Cheruniyoor	DCCP	50	-	-	2	3
36	31/10/07	Kulathupuzha	DCCP	140	2	-	5	5
37	14/11/07	Valiyakalangu	DCCP	43	-	-	-	-
38	17/11/07	Vithura	DCCP	18	1	-	2	-
39	18/11/07	Edamala	DCCP	56	-	-	3	2
40	23/11/07	Vamanapuram	DCCP	92	0	-	2	13
41	25/11/07	Mylem	DCCP	117	1	-	2	-
42	30/11/07	Kattakkada	DCCP	151	-	-	-	3
43	31/12/07	Palode	DCCP	99	-	-	3	1
44	5/12/07	Sroekariam	DCCP	45	-	-	-	2
45	8/12/07	Killimandor	DCCP	223	-	-	11	2
46	14/12/07	Konniyoor	DCCP	117	1	-	-	-
47	17/12/07	Neyyattinkara	DCCP	63	-	-	-	1
48	22/12/07	Undancoode	DCCP	53	-	-	-	1
49	29/12/07	Vavvakavu	DCCP	58	-	-	3	3
50	14/1/08	Valiyavila	DCCP	79	-	-	-	3
51	21/1/08	Mariyapuram	DCCP	32	-	-	-	3
52	23/1/08	Karamana	NSS Karayogam	117	1	-	5	5
53	25/1/08	Bharathiaroor	Kerala Mahila Samakya Society	144	2	-	4	4
54	27/1/08	Cherpu	Govt. of Kerala	40	-	-	2	-
55	28/1/08	Cherpu	Govt. of Kerala	32	1	-	2	-
56	28/1/08	Mulliyavila	DCCP	131	-	-	-	2
57	15/2/08	Kolloor	DCCP	37	-	-	-	2
58	18/2/08	Neduvavila	DCCP	40	-	-	-	-
59	20/2/08	Edavacode	DCCP	73	-	-	-	-
60	23/2/08	Puthukurichal	DCCP	108	-	-	-	1
61	16/2/08	Puthoor	Cashew Factory (C.F.)	654	1	-	13	-

62	21/2/08	Puthoor	Kareera C.F.	254	-	-	5	-
63	25/2/08	Vattavila	DCCP	87	-	-	-	3
64	27/2/08	ESI Peroorkada	DCCP	88	-	-	-	2
65	28/2/08	Nilamel	Naseer C.F.	223	4	-	9	-
66	28/2/08	Parandoor	DCCP	52	-	-	-	-
67	5/3/08	Anchalimoodu	Kailas C.F.	327	-	-	7	-
68	7/3/08	Kalluvathukkal	Vaishnav C.F.	153	-	-	2	-
69	8/3/08	Thirumala	State Bank of Travancore	95	1	1	5	7
70	9/3/08	Kottiyam	Prakash C.F.	358	2	-	3	-
71	12/3/08	Aryatrad	DCCP	32	-	-	-	-
72	15/3/08	Neyyattinkara	DCCP	33	-	-	-	-
73	19/3/08	Irithiyam	DCCP	48	1	-	-	1
74	24/3/08	Kolam	Kalakode PHC	135	-	-	-	9
75	25/3/08	Kundara	Govt. of Kerala	168	1	1	5	3
76	26/3/08	Kulappadam	Kalakode PHC	102	-	1	10	3
77	25/3/08	Paruthanppara	KSEDC	304	-	-	1	-
78	27/3/08	Umayanelloor	Sun Food C.F.	285	1	-	9	-
TOTAL				8650	36	13	252	180

**TABLE 19**  
**DETAILS OF CANCER AWARENESS PROGRAMMES THROUGH**  
**COMMUNITY ONCOLOGY DIVISION**

Sl. No	Date	Place	Organised through	No. Atten-Ded	Type of participants
1	04/04/07	RCC	RCC	12	Medical records students
2	05/04/07	Peroorkada	Public Health Nurse Training Centre	24	Nursing students
3	04/07	RCC	RCC	6	Nursing students
4	09/04/07	RCC	RCC	55	Nurses
5	10/04/07	Upputhara	Tobacco Cessation Clinic	47	Tribes
6	11/04/07	Kattappana		24	Tribes
7	12/04/07	Infosys, Technopark	Technopark	250	Software Engineers

8	16/4/07	RCC	DGHS	30	Nurses
9	24/4/07	Infosys, Technopark	Technopark	300	Software Engineers
10	27/4/07	Punalur	Social Service Society	75	Laypublic
11	28/4/07	Technopark	Toroid, Technopark	204	Software engineers
12	11/5/05	RCC	Nursing Division RCC	30	B.Sc Nursing students
13	14/5/07	RCC	DGHS	25	Nurses
14	18/5/07	RCC	RCC	40	B.Sc Nursing Students
15	31/5/07	RCC	IMA and RCA and RCC	65	Members of FRAT
16	31/5/07	RCC	IMA, RCA and RCC	225	Highschool & College students
17	4/8/07	Trirumala	RCA	63	Inner wheel club Members
18	7/8/07	Kaundiar	Christ Nagar School	220	Students
19	9/8/07	Vamanapuram	Tobacco Cessation Clinic	82	Laypublic
20	19/8/07	RCC	Nursing Division, RCC	30	State Level Nurses
21	24/8/07	Kozhicode	Tobacco Cessation Clinic	45	MSW students
22	25/8/07	Kozhicode	Tobacco Cessation Clinic	52	NSS volunteers
23	26/8/07	Kozhicode	Tobacco Cessation Clinic	85	College students
24	28/8/07	Kodunganoor	BVB School, Kodunganoor	200	Students
25	28/8/07	Kottayam	RCC	18	B.Sc MLT Students
26	30/8/07	RCC	RCC	35	Nurses
27	5/7/07	Bararamapuram	RCA	218	H S Students
28	10/7/07	RCC	IDA	35	Dental Surgeons
29	17/7/07	RCC	DGHS	30	State Level Head nurses
30	21/7/07	RCC	Lissy Hospital	16	B.Sc MLT students
31	29/7/07	Kottayam	MCH Kottayam	59	Gynecologists
32	1/8/07	Vilavakkoniam	ASRAYA	49	Laypublic
33	6/8/07	RCC	DGHS	30	State Level Nurses
34	16/8/07	Kasargode	Tobacco Cessation Clinic	71	Laypublic
35	17/8/07	Kasargode	Tobacco Cessation clinic	27	Teachers

36	18/8/07	Kasargode	Tobacco Cessation Clinic	203	Students
37	19/8/07	Kasargode	Tobacco Cessation Clinic	43	Students
38	24/08/07	Kalady	RCA	70	H S Students
39	4/9/07	RCC	DGHS	25	State Level Head nurses
40	11/9/07	Pathanamthitta	Tobacco Cessation Clinic	124	H S Students
41	11/9/07	Pathanamthitta	Tobacco Cessation clinic	62	Higher Secondary Students
42	12/9/07	Pathanamthitta	Tobacco Cessation Clinic	106	H S Students
43	20/9/07	RCC	DCCP	33	Staff nurses
44	21/9/07	Kattakkada	Tobacco Cessation Clinic	85	H S Students
45	27/9/07	RCC	SME Kottayam	20	B.Sc MLT students
46	7/10/07	Trichur	Govt. of Kerala	170	Laypublic
47	4/10/07	RCC	DGHS	30	Senior Level Nurses
48	17/10/07	Akkulam	Airforce	126	Staff
49	19/10/07	Kariavattom	Kariavattom University	126	Students
50	26/10/07	RCC	Nursing Division, MCH	139	B.Sc Nursing students
51	30/10/07	RCC	Nursing Division, RCC	30	Nurses
52	7/11/07	RCC	Community Oncology	135	Dental Students
53	13/11/07	Mar Ivanious college	PRATYASA	115	College Students
54	15/11/07	Kalady	RCA	72	H S Students
55	17/11/07	Shornur	Govt. of Kerala	218	Lay public
56	18/11/07	Shornur	Govt. Of Kerala	225	Lay public
57	20/11/07	Nalanchira	PRATYASA	282	H S Students
58	21/11/07	Kulasekharam	Sarada Memorial Homeopathic College	175	Doctors
59	27/11/07	Kaadi	RCA	62	H S Students
60	3/12/07	RCC	DGHS	30	Nurses
61	5/12/07	Vettukad	St. Mary's High School	70	H S Students
62	9/12/07	Trichur	Amala Cancer Centre	170	Gynecologists
63	12/12/07	Sreevaraham	Vanitha Samajam	46	Laypublic
64	14/12/07	Vamanapuram	Kerala Mahila Samakya Society	402	Laypublic
65	17/12/07	Chirayinkeil	Kizhuvilam Panchayath	354	Laypublic
66	18/12/07	Pathanamthitta	Tobacco Cessation Clinic, Community Oncology	63	H S Students
67	19/12/07	Pathanamthitta	"	60	H S Students



68	21/12/07	PTP Nagar	ASRAYA	76	ELITE women
69	1/1/08	Kottayam	Little Flower Hospital	12	B.Sc MLT Students
70	3/1/08	Angamali	SME Angamali	24	B.Sc MLT students
71	5/1/08	ESI Hospital	ESI	30	Doctors
72	8/1/08	Angamali	SME Angamali	12	B.SC MLT students
73	15/1/08	Trichur	Nirmala College	3	MSW Students
74	15/1/08	Pathanamthitta (Thumpumthura)	Tobacco Cessation Clinic, Community Oncology division	105	High School students
75	15/1/08	Pathanamthitta (Maroor)	.	77	H S Students
76	16/1/08	Pathanamthitta (Kadambanad)	.	136	H S Students
77	16/1/08	Pathanamthitta (Mannady)	.	67	H S Students
78	31/1/08	Perumathura	Mahila Samakya Society	212	Women volunteers
79	4/2/08	RCC	DGHS	30	Nurses
80	6/2/08	Medical College Hospital, TVM	Nursing College	145	BSc Nursing Students
81	7/2/08	IBN, Technopark	Technopark	226	Staff
82	12/2/08	Pathanamthitta (Parakode)	Tobacco Cessation Clinic, Community Oncology division	174	H S Students
83	13/2/08	Pathanamthitta (Kadamanitta)	.	85	High School Students
84	13/2/08	Pathanamthitta (Mylapra)	.	92	High School students
85	12/3/08	Kothamangalam	.	44	Tribes
86	13/3/08	Pathanamthitta (Neniamangalam)	.	34	Tribes
87	14/3/08	.	.	52	High School Students
<b>TOTAL</b>				<b>8274</b>	

**Merits, conferences / workshops attended, papers presented, talks delivered**

**Dr. Ramani S. Wesley**

Programmes through electronic media:

Kairali

Breast cancer and cervical cancer

Regional Cancer Centre, Thiruvananthapuram



Sri. M. Vijayakumar, Hon'ble Minister for Law at the inauguration of One month Anti tobacco campaign in connection with 'World No Tobacco Day' (31 May 2007)



*Stage show (Anti-tobacco campaign) on 'World No Tobacco Day' (31 May 2007)*



Amritha TV  
Doordarshan  
Jai Hind  
AIR

Sakhi Programme  
Kootukari Programme  
Panel discussion  
2 programmes

**Dr. Gigi Thomas**

National Workshop on Oral Cancer, Kidwai Memorial Institute of Oncology & Govt. Dental College and Research Institute, Bangalore. 24-26 May 2007. (as invited speaker and faculty)

10<sup>th</sup> Annual Conference of Indian Academy of Oral Medicine and Radiology, Chennai, Tamil Nadu. 21-23 December 2007.

Paper presented: 'Tobacco associated oral lesions'.

Oral Cancer Conference, Organised by Indian Dental Association, Thiruvananthapuram. 10 July 2007.

Paper presented: 'Mortality reduction in Oral Cancer: evidence based approach'.

**Dr. R. Jayakrishnan**

Talks aired in All India Radio and telecasted in Doordarshan in connection with World No Tobacco Day. 31 May 2007.

5<sup>th</sup> 'World Assembly on Tobacco Counters Health' (WATCH), 2 - 5 December 2007, New Delhi, India.

Paper presented: 'Tobacco use pattern and awareness on tobacco legislation among adolescent students in rural Kerala, India'.

National Conference on Emerging Issues in Public Health. Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram. 10 - 13 January 2008.

Paper presented: 'Tobacco Dependence among the distinct tribal population in Kerala, India'.

6<sup>th</sup> National Tobacco Cessation Centres Meeting, Cancer Institute (WIA), Chennai. 11 - 12 October 2007.

**Mr. Sreekumar C**

ICRETT fellowship for training, Arizona Cancer & Research Centre, United States. June 2007.

## PAIN AND PALLIATIVE CARE

Dr. Cherian M. Koshy	Associate Professor
Dr. Manjula R.	Resident Medical Officer
Dr. Prasanth, C.V.	Resident Medical Officer
Dr. Latha P.T.	Lecturer in Sociology
Mrs. Kumari Thankam	Nurse in Charge, Palliative Care

The Division of Palliative Care continued to have multifaceted activities carried out through its staff and volunteers. On January 30<sup>th</sup> 2008, one day CME titled 'End of Life issues and the role of the Team' was held. Rev Peter Speck and Patricia Atkinson from UK were the main speakers. Another CME, 'Challenges in Palliative Care' was held on 18<sup>th</sup> February 2008 and the main speaker was Dr. Robert Twycross, Emeritus Professor at Oxford. On May 16<sup>th</sup> 2007 the first oral morphine (capsule) manufacturing unit was inaugurated by the Hon. Health Minister.

World Palliative Care day was celebrated on 6<sup>th</sup> October 2007 and on this day a decorated vehicle was flagged off by the Health Minister carrying the Palliative Care message to different parts of the city. Tele-medicine link between the RCC and Pain and Palliative Care Centre Adimali was inaugurated on this day by the Health Minister. The addition of a pneumatic compression pump has greatly boosted our lymphoedema services.

**Table 20 : Patients seen and ancillary supports**

New	2836
Old	5010
Teleclinic with Adimali	40
<b>Ancillary Supports</b>	
Psycho-social support and Counseling	240
Breast Prosthesis provided	378

Regional Cancer Centre has been recognized as training centre by the Indian Association of Palliative Care for the Certificate Course in Palliative Care.



*Inauguration of Morphine Capsule manufacturing Unit by  
Smt. P.K. Sreemathy Teacher, Hon'ble Minister for Health. (16 May 2007)*



"Santhwana Sandesa Yatra", the vehicle rally was flagged off by Smt. P.K. Sreemathy Teacher, Hon'ble Minister for Health on 'World Palliative Care Day' (6 October 2007)

Regional Cancer Centre has been authorized to carry out training programmes on Kerala Govt Palliative Care Policy and funded by National Rural Health Mission, Govt. of India.

**Merits, Conference/training attended**

**Dr. Cherian M. Koshy**

Faculty and Examiner, IAPC Certificate course.

Examiner, Diploma in Pain & Palliative Care, Amrita Vishwa Vidyapeedam. February 2008.

Training programme for National faculty in Palliative Care, Bangalore. November 2007.

Training programme for National faculty in Palliative Care, Kozhikkode, February 2008.

**Dr. P.T Latha**

M SW students trained 22

Participated as faculty for various in-service training programmes

**Mrs. Kumari Thankam**

Helen Passant Real Nursing Award, Cancer Relief India. 2007.

Cancer Relief India Scholarship to participate in International Palliative Care Seminar, United Kingdom. May 2007



## DENTAL CARE

Dr. Nalinakumari.K.R. Assistant Professor

This division provides a variety of treatment modalities for the oral health of cancer patients.

### Clinical Activities

1. Minor surgical Procedures like oral biopsies.
2. Basic procedures like
  - a). Oral prophylaxis (scaling)
  - b). Conservative therapy
  - c). Dental extractions
  - d). Occlusal adjustments
3. Therapeutic management of pre cancerous oral lesions.
4. Management of osteoradionecrosis
5. Pre and Post radiation care of teeth including neutral Fluoride application.
6. Reconstructive procedures like construction of maxillofacial prosthesis.
7. Management of oral problems of patients undergoing chemotherapy like ulcers, spontaneous bleeding, toothache, etc
8. Management of temporomandibular problems and trismus.

### Patients attended

Total No of patients seen	2115
No. of new cases	644
No. of post radiation care patients	1551
No. of post radiation care new cases	367
No. of scaling done	29
No. of Maxillofacial prosthesis	12

### Pre & post radiation care of teeth.

In the pre-radiation care we try to eliminate all the conditions such as caries tooth, root stumps, poor oral hygiene etc. within the oral cavity which are liable to pose a problem during the next 5-10 years after radiation therapy especially in the head & neck region. This includes

Procedures like oral prophylaxis, conservative therapy, dental extractions and oral hygiene instructions for better maintenance during radiation treatment. Post radiation care includes mainly neutral fluoride therapy, advocated to all patients undergoing in the head and neck region. Neutral fluoride gel application is one of the best possible ways to protect the teeth from sensitivity, post radiation caries, etc. Currently about more than 1500 patients are undergoing fluoride therapy of which nearly 400 are new cases. This treatment should be continued for about 2-3 years more from the day of radiation. Patients who are undergoing this therapy have less complaints of oral cavity than those who do not. Post radiation mucositis is managed by using smoothing, protecting and anti microbial oral rinses and ointments.

### Pre-surgical oral care

In the pre surgical oral care, conditions such as caries tooth, root stumps poor oral hygiene etc. within the oral cavity which is liable to pose a problem during and after surgery and later radiotherapy in almost all cases especially in the head and neck region are eliminated. The same procedures which are mentioned in the pre radiation dental care are continued. In the post surgical period, sometimes maxillofacial prosthesis is advocated for correcting deformities of the face.

### Post chemotherapy oral care

The burning sensitivity after chemotherapy is managed by the use of smoothing, protecting and antimicrobial oral rinses and ointments. Post chemo dental caries also occurs in some cases and are managed by neutral fluoride gel therapy, conservative therapy and proper oral hygiene instructions.

### Observational training

Practical orientation was given to the final year BDS students of School of Dentistry, University of Dundee, Scotland, United Kingdom, who visited the Department in batches during the period, 5-07-07 to 10-07-07; 8-08-07 to 7-08-07 and 16-08-07 to 17-08-07.

### Conference attended

Dr. Nalinakumari K.R.  
3<sup>rd</sup> meeting of the Kerala Academy of Oral & Maxillo-facial Pathologists, Kochi. 11 August 2007.

## NURSING SERVICES

Mrs. Flower Augustine      Nursing Superintendent Gr.II  
 Mrs. Geetha S              Nursing Supervisor  
 Mrs. Aleykutty P.M        Nursing Supervisor

Nursing Division has been responsible for providing quality patient care at the out patient & Inpatient units of RCC. Nurses provided support and guidance to patients and relatives so also rendered palliative care service to patients. Our area of service was extended to the Bone marrow transplantation unit, which was started during the year under report. International Nurses day was commemorated by a panel discussion on "Delivering Quality, Servicing Communities, Nurses Leading to Primary Health Care". Nurses took Nurses day Pledge.

### 1. Educational Activities

Division Offered Clinical Experience and Orientation/Observation Update to Nursing Students from Govt. as well as private institutions.

- (a) Clinical Experience for M.Sc. Nursing Students (Community Speciality) of College of Nursing, Trivandrum from 9<sup>th</sup> April to 14<sup>th</sup> April 2007 (8 Students)
- (b) Orientation Update for B.Sc. Nursing Students of St. Gregarious College of Nursing, Perumala on 9<sup>th</sup> April 2007 (23 Students) and 10<sup>th</sup> April 2007 (25 Students)
- (c) Orientation Update for B.Sc. Nursing Students of Little Flower Hospital, Angamaly on 27<sup>th</sup> April 2007 (22 Students) and 28<sup>th</sup> April 2007 (23 Students)
- (d) Clinical Experience for B.Sc. Nursing Students of College of Nursing, Trivandrum from 9<sup>th</sup> May 2007 to 11<sup>th</sup> May 2007 (30 Students) and 14<sup>th</sup> May 2007 to 19<sup>th</sup> May 2007 (30 Students)
- (e) Orientation Visit for G.N.M Students of S.K.P. School of Nursing on 14<sup>th</sup> July 2007 (19 Students)
- (f) Orientation Visit for B.Sc. Nursing Students of Alshifa Collge of Nursing, Perinthalmanna on 2<sup>nd</sup> August 2007 (25 Students) and 3<sup>rd</sup> August 2007 (25 students)
- (g) Orientation Visit for M.Sc. Nursing Students of PSG College of Nursing, Coimbatore on 29<sup>th</sup> November 2007 (10 Students).

### Training Programmes Conducted

1. "Oncology Nursing – A Professional Challenge" for Regd. Nurses sponsored by DGHS, Govt. of India from 18<sup>th</sup> – 25<sup>th</sup> April 2007
2. "Management Techniques for Nurse Managers" for Senior Level Nurses sponsored by DGHS, Govt. of India from 14<sup>th</sup> – 23<sup>rd</sup> May 2007
3. "Oncology Nursing – A Multidisciplinary Approach" for Regd. Nurses sponsored by DGHS, Govt. of India from 18<sup>th</sup> – 28<sup>th</sup> June 2007
4. "Quality Care – an Update for Nurse Managers" for Senior Level Nurses sponsored by DGHS, Govt. of India from 16<sup>th</sup> – 26<sup>th</sup> July 2007
5. "Advanced Practices in Oncology Nursing" for Regd. Nurses sponsored by DGHS, Govt. of India from 6<sup>th</sup> – 16<sup>th</sup> August 2007
6. "Update on Managerial Skills for Nurse Managers" for Senior Level Nurses sponsored by DGHS, Govt. of India from 3<sup>rd</sup> – 13<sup>th</sup> September 2007
7. "Nursing Insight in Oncology" for Regd. Nurses sponsored by DGHS, Govt. of India from 19<sup>th</sup> – 29<sup>th</sup> September 2007
8. "Ward Management – A Critical Approach" for Senior Level Nurses sponsored by DGHS, Govt. of India from 3<sup>rd</sup> – 13<sup>th</sup> October 2007
9. "Cancer Nursing Update" for Regd. Nurses sponsored by DGHS, Govt. of India from 29<sup>th</sup> Oct – 8<sup>th</sup> Nov 2007
10. "Update on Ward Management Techniques" for Senior Level Nurses sponsored by DGHS, Govt. of India from 26<sup>th</sup> November – 6<sup>th</sup> December 2007
11. "Oncology Nursing – A Speciality" for Regd. Nurses sponsored by DGHS, Govt. of India from 7<sup>th</sup> Jan – 17<sup>th</sup> Jan 2008
12. "Role of Nurses for a Comprehensive Management" for Senior Level Nurses sponsored by DGHS, Govt. of India from 4<sup>th</sup> February – 14<sup>th</sup> February 2008



### **Nursing Assistant Training Course**

7<sup>th</sup> Batch Nursing Assistants Training Programme Commenced on 15<sup>th</sup> October 2007

### **Merits, Conferences/meetings attended**

#### **Mrs. Beena Koshy**

Secured 1<sup>st</sup> rank in M.Sc. (Nursing), University of Kerala, January 2008.

#### **Mrs. Shijikumar N.G., Mrs. Anupama B**

Seminar on Comprehensive Management of Patients with Head & Neck Cancer, Bangalore. 21 - 22 September 2007.

#### **Mrs. Bensamma Varghese, Mrs. Jessy Thomas**

2<sup>nd</sup> Congress of Asia Pacific Enterostomal Therapy Nurses Association, Mumbai. 22 - 22 November 2007.

#### **Mrs. Aniamma Joseph**

Meeting in connection with solid waste management and dioxin emission control, National Institute for Interdisciplinary Science & Technology, Thiruvananthapuram. 22 October 2007.

#### **Mrs. Flower Augustine, Mrs. Sophiya Lilly**

10<sup>th</sup> National Oncology Nursing Conference, Tata Memorial Hospital, Mumbai. 3 - 9 December 2007.

## **CLINICAL LABORATORY SERVICES**

Dr. Thomas Abraham	Scientific Officer Gr. I
Mrs. Gangadevi C	Technical Officer
Mrs. J. Usha	Technical Officer

The Clinical Laboratory Services is dedicated primarily to support patients attending the Regional Cancer Centre for treatment. Its activities include specimen collection for outpatients, processing, analysis and reporting of various tests for both out-patients and inpatients. About 1 million tests are being carried out annually. One doctoral level scientist, 2 Technical Officers and 14 lab technicians and 5 supportive staff work in the division.

The following groups are part of the Division.

### **Phlebotomy**

The phlebotomy lab provide services mainly to outpatients of this Centre. The services include blood collection and provision of containers for urine. Phlebotomy lab carries out approximately 1.5 lakh collection related procedures annually. It also provides instruction for specimen collection like 24-hour urine collection for creatinine clearance.

Open system was introduced for those who come for collection of blood samples and this improved the efficiency of the lab. Patient throughput is quicker as it avoided delay between patients and the patient flow could be controlled. The patients know that they are in the process and that they are not forgotten. Thus optimizing patient flow improved the patient service and created a more relaxed atmosphere for both patients and staff. Many patients would prefer to be anonymous; they do not want their name to be called publicly. Phlebotomy staff also reported noticeable improvement in their working conditions after introduction of the system. Improvement in quality and reduction in turn around time were the markers of efficiency. Average turn around time is about 1.2 hours for haematology and 1.5 hours for Clinical Chemistry and Coagulation profile.

### **Clinical Chemistry**

Clinical chemistry lab processes, analyses and reports about 400,000 tests annually. The lab has started carrying out additional investigations for the patients. This includes Total CO<sub>2</sub>, Lipase, Lipid profile, C- reactive

protein, Gamma glutamyl transferase(GGT), Bilirubin conjugated, Bilirubin unconjugated, Magnesium, Serum Iron, Total Iron binding capacity (TIBC) etc.

Fully automated high through-put clinical chemistry analyser (Vitros 950) was added this year. This facilitated the improvement in the quality as well as turn around time.

Measurement of Bilirubin and its fractions in blood specimens. The concentration of each of the different forms of serum bilirubin provides additional diagnostic information for clinicians when compared to the total bilirubin alone. Assay for determination of Bilirubin conjugated and Bilirubin unconjugated were added in the current year. This further provided us with additional calculated values other bilirubin fractions as well.

Special tests like serum immunoglobulin estimation, Serum electrophoresis etc. are also being carried out.

Urine analysis section analyses and reports about 10, 000 samples (Sugar, Protein, pH, Specific gravity, Ketone, Urobilinogen, Deposits etc.) each year. A urine analyser system installed in the clinical lab is used for routine urine analysis.

**Hematology**

Hematology section carried out about 0.5 million tests in the current year. This includes automated haematology (Haemoglobin, Total WBCs, Platelets, PCV, RBC etc.). Differential count and Reticulocyte count were carried out by microscopy. Daily QC analysis is also being carried out for automated haematological analysis.

The department has been a participant in the External Quality Assurance Services Bio-Rad Laboratories, USA for Clinical Chemistry proficient testing programme. Daily QC analysis is also done for clinical chemistry as well as for hematology. The department has been actively supported and collaborated in several clinical research projects.

**Table 21 : Investigations carried out**

Biochemical Investigations	No.
Sugar	43657
Urea	32638
Creatinine	37086

Uric Acid	21640
Bilirubin	22637
Other Bilirubin fractions (Direct bilirubin, Conjugated & Unconjugated bilirubin, Delta bilirubin & Neonatal bilirubin)	2461
SGOT(AST)	21837
SGPT(ALT)	22910
Alk. Phosphatase	19379
Gamma Glutamyl transferse	87
Total Protein	13973
Albumin	14032
Globulin	13707
C- Reactive protein	127
Cholesterol	714
Lipid profile	295
(Cholesterol, HDL, LDL & Triglycerides)	29656
Sodium (Na <sup>+</sup> )	
Potassium (K <sup>+</sup> )	29656
Chloride	563
Total CO <sub>2</sub>	295
Calcium	19606
Phosphorous	1721
Magnesium	505
Iron	57
Total Iron binding capacity	59
Creat. Clearance Test	2103
LDH	4026
Amylase	297
Lipase	34
CSF (sugar & protein)	203

Serum Immunoglobulin assay (IgG, IgA & IgM)	631
Serum Electrophoresis	416
<b>Haematology investigations</b>	
Haematology CBC (Haemoglobin, WBC Count & Platelets)	124963
Differential Count	11622
Reticulocyte count	46
ESR	3515
<b>Coagulation parameters</b>	
Bleeding Time/Clotting Time	3384
Prothrombin Time	1787
APTT	521
<b>Urinalysis</b>	
Urine Routine (Sugar, Protein, pH, Specific gravity, Ketone, Urobilinogen, Deposits etc.)	9160
Bence-Jones Protein	209

#### Human Resource Development

The Clinical Laboratory provides training to graduate and post-graduate students from various Colleges and Universities in clinical laboratory related techniques. Short term industrial training was given to B.Tech students and Graduate and Post-graduate students in various Biological Sciences.

In the current year, 15 Biochemistry post-graduates underwent intensive training for 3-6 months in biochemistry laboratory. Three M.Sc. students Biochemistry/Biotechnology completed their M.Sc. project dissertation and one B.Tech (biotechnology) student completed their B.Tech. project dissertation in the division during the current year. Training was given to 6 B.Sc. MLT students for a period of 3 to 6-months in the department during the current period. Short term training upto one month was also given to 25 B.Sc. Biotechnology/ Microbiology students, 4 B.Sc MLT students and 5 B.Tech (biotechnology) students.

## BLOOD BANK

Dr. K. Vijayalakshmi Assistant Professor  
 Dr. P. Jayalakshmi Resident Medical Officer  
 Dr. Rajesh R. Chandran Resident Medical Officer (From 17-08-2007)

Most patients of RCC require blood and blood products at some stage of their treatment. The Blood Transfusion services of this division functions to meet the requirements of not only the patients of RCC but also patients from hospitals in and around Trivandrum. With cent percentage component separation of collected blood units and assisted by state-of-the-art facility for Apheresis, Blood Bank Division services of this hospital is at par with any of well functioning blood bank in Kerala. A team of dedicated Doctors and Technicians work incessantly to meet the ever increasing demand for Blood and blood products. As a token of recognition of the importance of staff requirement in this division, two permanent staff members in the form of one Assistant Professor and one Resident Medical Officer were appointed during the report year in addition to the already existing post of one Resident Medical Officer. The total number of technicians were increased from 4 to 7.

#### Routine Activities:

- Collection of Blood from Voluntary Donors and Replacement Donors.
- Separation of collected whole blood into blood components like Red Cells, Platelets and Plasma after conducting tests for transmissible diseases.
- Issue of blood products like PRP, PRC to Cancer patients on Chemotherapy.
- Issue of blood products like PRC, FFP to patients during Surgery.
- HIV, HbsAg Blood Grouping Tests on all patients awaiting Surgery/ before Surgical procedures and interventions like Endoscopy, Central Line Insertion, Bone Marrow Biopsy.
- Platelet Pheresis for Patients requiring large doses of Platelet Concentrates.
- Stem Cell Pheresis to harvest Pluripotent Stem Cells on patients awaiting Stem Cell Transplantation after high dose Chemotherapy.

#### Academic Programmes

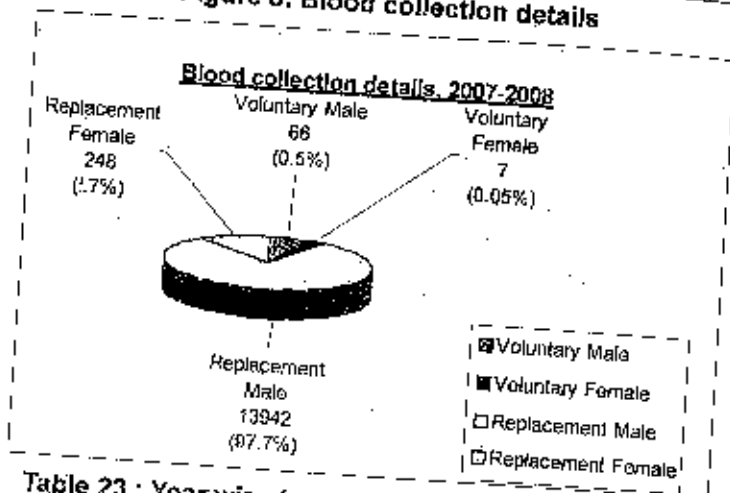
Monthly classes were conducted for Senior level Nurses from Directorate of Health Services.

Two weeks training to students of BSc MLT Course from School of Medical Education, MG University.  
 Two weeks training to students of Msc Biochemistry course from MG University.  
 Observership in "Good Blood Bank Practices" offered to technical staff of Terumo Penpol and Hindustan Latex Limited.

**Table 22 : Blood Collection Details**

Voluntary		Replacement		Total
Male	Female	Male	Female	
66 (0.5%)	7 (0.05%)	13942 (97.7%)	248 (1.7%)	14274

**Figure 8: Blood collection details**



**Table 23 : Year wise break up of donors (1998-2007)**

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
No of donors	4000	5013	5102	5255	7282	7001	9145	9646	12329	14274

**Table 24: Laboratory tests done on Donors blood**

	HIV	HBsAg	HCV	VDRL	Malaria
Number of tests done	14274	14274	14274	14274	14274
Positive tests	6 (0.04%)	143 (1%)	12 (0.08%)	2 (0.01%)	--

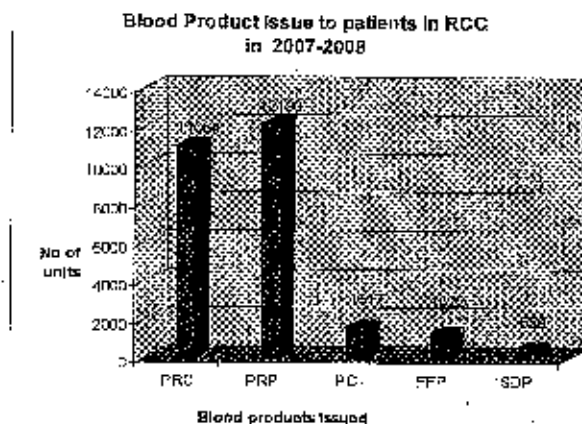
**Table 25 : Blood Component Preparation**

Whole blood	PRC	PRP	PC	FFP	SDP
--	13990	12220	1792	1792	--

**Table 26 : Blood Component Issue**

	Whole blood	PRC	PRP	PC	FFP	SDP
To RCC	--	11064	12190	1617	1322	559
Other Hospitals	--	983	30	10	63	14
Total	--	12047	12220	1827	1385	573

**Figure 9: Blood product issue to patients**



**Table 27 : Laboratory tests done on patients blood**

Blood Grouping	HIV	HBsAg	Cross Match	Coomb's Test
7868	7868	7868	13672	43

**Conferences / Training / CME Attended**

Dr Vijayalakshmi, Dr Jayalakshmi, Dr Rajesh, Ms Sumi. S R.  
 CME on "Leukoreduction in Transfused Blood" at SCTIMST, Aug 2007.  
 Mr Rajesh R. V., Ms. Sumi S R.  
 CME on "Newer Trends in Transfusion Medicine" at KIMS, Dec 2007.  
 Dr Vijayalakshmi attended two week training on "Cryopreservation of Stem Cells and Blood Banking Techniques" at CMC Vellore in Nov 2007.

## CLINICAL SERVICES AND MEDICAL RECORDS

Mr. R. Raveendran Nair Administrative officer (Clinical Services)  
Mrs. D. Chandrika Medical Records Officer  
Mr. V. Surendran Nair Public Relations Officer

### This division is entrusted with:

Front Office management  
Medical Records maintenance  
Pharmacy  
Vehicles

Cancer Care for Life scheme  
Patient accounts & billing  
Patient welfare services  
Other patient related services

The patients referred to RCC for consultation, investigation treatment and follow up were registered. The cases referred just for investigation purpose were not registered. The following table shows the hospital statistics for the reporting period 2007-2008.

Table 28 : Hospital Statistics 2007-08

No.	item	Numbers
1	New case registered	11327
2	Review cases*	139818
3	Total patients(New + review)	151145
4	Daily average	504
5	Average attendance per patient	13
6	No. of in patient admissions	9966
7	Total bed occupancy	93387
8	In Patient bed**	278
9	Average bed occupancy	256
10	Percentage of bed occupancy	92
11	Average length of stay	9
12	Hospital death	675
13	Telemedicine consultation	2209

\*Follow up at peripheral centers, teleclinic, palliative care, consultation from clinic to clinic, review during treatment etc are not included.

\*\* Day care chemo ward, cubicle CT ward and other admissions not meant for overnight stay are not included. 4 beds for Bone Marrow Transplantation were added in November 2007.

Work load has increased to 224 percentage during 1982 - 2007-08. Line diagram shows the pattern from 1982 to 2007-2008.

Fig. 10 : New Patients registration (1982-2007)

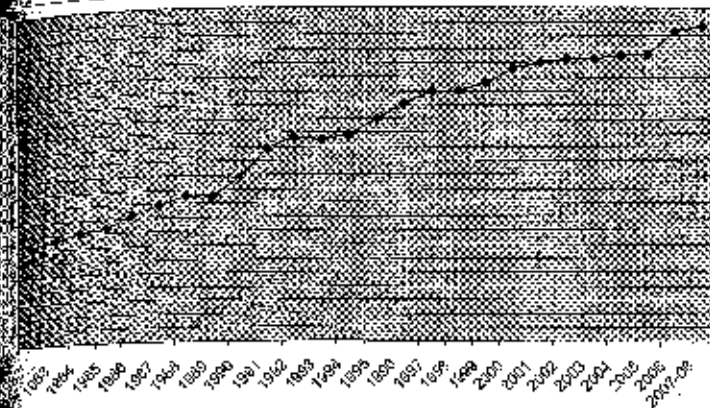
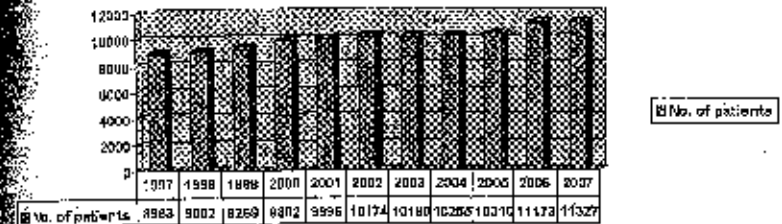


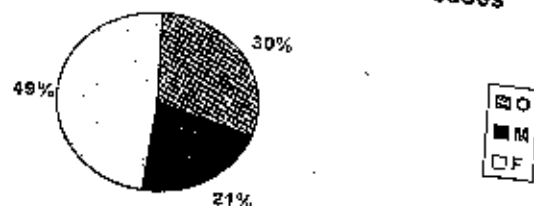
Fig. 11 : Absolute numbers of new patients registration (1997-2007)



Every new patient reported to RCC was assessed and categorized according to O, M & F.

- O - Affordable to pay fully
- M - Affordable to pay partially
- F - Not affordable to pay but a little (Radiation totally free)

Fig. 12 : Category wise distribution of new cases



During this report period, 1272 requests were received from patients for re-considering the income category since they could not afford the treatment cost. A designated committee reviewed all application on monthly basis and resolved to change 455 application from 'M' to 'F', 54 application from 'O' to 'F', 306 application from 'O' to 'M' and for 84 patients concession for treatment were given.

Table 29 : Age, Sex distribution of Patients (2007-08)

Age Group	Male	%	Female	%	Total	Percentage
0-14	310	6%	201	4%	511	5%
15-24	221	4%	318	5%	539	5%
25-34	297	5%	514	9%	811	7%
35-44	580	10%	990	18%	1570	14%
45-54	1130	20%	1343	24%	2473	22%
55-64	1537	27%	1220	21%	2757	24%
65-74	1177	21%	766	14%	1943	17%
75+	422	7%	301	5%	723	6%
Total	5874	100	5853	100	11327	100
Percentage	50%		50%		100%	

Every new patient was registered in the site specific clinic. The distribution of patients in various specialty clinics is as follows:-

Table 30 : Site specific clinic wise distribution of patients

Clinic	No.	Percentage
A	1550	14%
B	2222	20%
C	1879	16%

D	1936	17%
E	2568	23%
F	511	4%
G	661	6%
Total	11327	100%

- A: Lympho reticular system, bone, and CT
- B: Head and Neck cancers
- C: Breast and CNS
- D: Genito urinary and others NOS
- E: Respiratory and Gastro intestinal
- F: Patient less than 14 years of age
- G: Thyroid

Compared to previous year, percentage wise distribution of cases remained same except 1% increase in A, D, E clinics and decrease in C, F & G clinics.

Table 31 : Religion wise distribution of new cases-2007-08

Religion	Male	%	Female	%	Total No	Percentage
Hindu	3379	60%	3495	62%	6874	60%
Muslim	1182	20%	1032	18%	2214	20%
Christian	1113	20%	1126	20%	2239	20%
Total	5674	50%	5653	50%	11327	100%

Table 32 : Clinic wise break up of patients

Clinic	New	Review*	Total	Average/day
A	1550	24328	25878	86
B	2222	21762	23984	80
C	1879	26048	27927	93
D	1936	21122	23058	78
E	2568	17001	19569	65
F	511	14856	15367	51
G	661	7410	8071	27
SO	---	7291	7291	24
Total	11327	139818	151145	504



For review visits 75% of the patients maintained regular appointments. While analyzing previous year's data, it is seen that the patient attendance has increased in all clinics.

**Table 33 : Clinic wise distribution of inpatient admission.**

Clinic	Admission**	New Admission	Repeat Admission	Percentage
A	2141	498	1643	21%
B	1874	1021	653	17%
C	1470	1023	447	15%
D	1318	700	618	13%
E	1653	859	794	17%
F	1087	265	802	11%
G	645	645	0	6%
Total	9966	5011	4955	100%

\*\*Admission to palliative care, surgery, also included.

In total admissions 21% belongs to lymphoreticular system clinic (A). The present bed capacity is inadequate to accommodate all newly admitted patients in time. Minimum waiting period for getting payward has been 2-3 weeks.

Patients are coming to RCC from different hospitals on referral basis. The majority of patients were from teaching hospitals, eminent private doctors and private hospitals. The following table shows distribution of reference for the year 2007-2008.

**Table 34 : Distribution of cases referred**

Referred from	No.	Percentage
Teaching Hospitals (MCH)	3809	33.6%
District/ General hospitals	681	6.0%
Other Govt. hospitals	536	4.7%
VSSC/ECCHS/ESI/CGHS/ Railway hospitals	524	4.6%
ECDC and peripheral centers	113	1.0%
Other Cancer Centers	42	0.4%
Private doctors	823	7.3%
Private hospitals	4467	39.4%

Overseas	43	0.4%
Self/RCC	289	2.6%
Total	11327	100%

The RCC, 25% of patients reported from Trivandrum district and 15% from outside Kerala. The table shows the distribution of new patients according to geographical area.

**Table 35 : New patients by geographical area**

District	Number	Percentage
Trivandrum	2790	25%
Kollam	2121	19%
Pathanamthitta	636	7%
Alapuzha	659	6%
Kottayam	268	2%
Idukki	145	1%
Ernakulam	481	4%
Trichur	487	4%
Palakkad	413	3%
Calicut	378	3%
Malappuram	598	5%
Wayanad	59	1%
Kasargode	130	1%
Kannur	434	4%
Others *	1728	15%
Total	11327	100%

\*The others include Tamil Nadu, Karnataka, Lakshadweep, Male etc.

During the period 2007, 11317 cases were registered and classified according to ICD-10. Out of them, 88% had confirmed diagnosis of malignancy.

RCC has signed MOU with number of organisations such as ESI, ECCHS, CGHS, VSSC, Railway etc. to provide treatment on credit basis.

The following table shows the distribution of patient undergone treatment during the reporting period.

**Table 36 : Distribution of patients undergone treatment**

Type of Treatment	Total Patient	Reporting Period	Percentage	Previous Year
Radiotherapy	5957	4478	41%	1479
Chemotherapy	7295	4361	40%	2834
Surgery	2942	2113	19%	828
<b>Total</b>	<b>16194</b>	<b>10952</b>	<b>100%</b>	<b>5242</b>

Supportive treatment, hormone etc not included. Combination treatment not calculated separately.

The following table shows leading 1<sup>st</sup> ten sites of cancer by sex.

**Table 37 : Leading 1<sup>st</sup> ten sites of cancer by sex -2007**

Total				Male			Female		
Rank	Site	No	%	Site	No	%	Site	No	%
I	Breast	1427	14.32	Lung	697	13.69	Breast	1411	28.83
ii	Leukemia	912	9.15	Leukemia's	555	10.90	Cervix Uteri	502	10.30
iii	Lung	820	8.23	Tongue	328	6.45	Thyroid	485	9.85
IV	Thyroid	627	6.29	Lymphomas	310	6.09	Leukemia	357	7.33
V	Cervix Uteri	502	5.09	Mouth (BM)	235	4.62	Ovary	237	4.88
VI	Lymphomas	467	4.68	Larynx	234	4.60	Lymphomas	157	3.22
VII	Tongue	463	4.65	Oesophagus	228	4.48	Mouth (BM)	136	2.78
VIII	Mouth (BM)	371	3.72	Stomach	220	4.32	Tongue	135	2.77
IX	Secondaries	342	3.43	Secondaries	213	4.18	Secondaries	125	2.65
X	Oesophagus	315	3.16	Brain	153	3.01	Body of Uterus	128	2.63
	<b>Total</b>	<b>6246</b>		<b>Total</b>	<b>3173</b>		<b>Total</b>	<b>3677</b>	
	<b>Grand Total</b>	<b>9963</b>	<b>63%</b>	<b>Grand Total</b>	<b>5091</b>	<b>62%</b>	<b>Grand Total</b>	<b>4872</b>	<b>76%</b>

The following table is the site wise distribution of cases classified according to ICD-10

**Table 38 : Site/sex wise distribution of new cases-2007 (ICD-10)**

ICD10	SITE	MALE	%	FEMALE	%	TOTAL	%
C00	LIP	8	0.16	21	0.43	29	0.29
C01	BASE OF TONGUE	38	0.75	4	0.08	42	0.42
C02	TONGUE	290	5.70	131	2.69	421	4.23
C03	GUM	108	2.12	79	1.62	187	1.88
C04	FLOOR OF MOUTH	63	1.24	7	0.14	70	0.70
C05	PALATE	42	0.82	15	0.31	57	0.57
C06	OTHER PARTS OF MOUTH	235	4.62	136	2.79	371	3.72
C07	PAROTID GL. MAJOR	28	0.55	22	0.45	50	0.50
C08	SALIVARY GL.	4	0.08	4	0.08	8	0.08
C09	TONSIL	30	0.59	4	0.08	34	0.34
C10	OROPHARYNX	134	2.63	6	0.12	140	1.41
C11	NASOPHARYNX	39	0.77	19	0.39	58	0.58
C12	PYRIFORM SINUS	70	1.37	8	0.16	78	0.78
C13	HYPOPHARYNX	52	1.02	30	0.62	82	0.82
C14	PHARYNX, ORAL CAVITY ETC.	6	0.12	2	0.04	8	0.08
C15	ESOPHAGUS	228	4.48	87	1.79	315	3.16
C16	STOMACH	220	4.32	71	1.46	291	2.92
C17	SMALL INTES.	9	0.18	7	0.14	16	0.16
C18	COLON	86	1.69	54	1.11	140	1.41
C19	RECTOSIGMOID	19	0.37	16	0.33	35	0.35
C20	RECTUM	121	2.38	86	1.77	207	2.08
C21	ANUS & ANAL CANAL	11	0.22	8	0.16	19	0.19
C22	LIVER	117	2.30	24	0.49	141	1.42
C23	GALL BLADDER	7	0.14	10	0.21	17	0.17
C24	OTH.BILIARY TRACTS	22	0.43	6	0.12	28	0.28
C25	PANCREAS	77	1.51	37	0.76	114	1.14
C26	OTH. LL DEF. DIGESTIVE ORG.	1	0.02	2	0.04	3	0.03

C30	NASAL CAVITY	10	0.20	10	0.21	20	0.20
C31	ACCESSORY SINUSES	31	0.61	12	0.25	43	0.43
C32	LARYNX	234	4.60	5	0.10	239	2.40
C33	TRACHEA	2	0.04	3	0.06	5	0.05
C34	LUNG	697	13.69	123	2.52	820	8.23
C37	THYMUS	2	0.04	1	0.02	3	0.03
C38	HEART, MEDIAST, PLEURA	10	0.20	5	0.10	15	0.15
C40	BONE OF LIMBS	43	0.84	19	0.39	62	0.62
C41	OTHER BONE	19	0.37	20	0.41	39	0.39
C43	SKIN, MELANOMA	18	0.35	10	0.21	28	0.28
C44	SKIN, OTHER	70	1.37	36	0.74	106	1.06
C47	PERIPH. NERVES & ANS	1	0.02	-	-	1	0.01
C48	RETROPERIT.	13	0.26	20	0.43	33	0.33
C49	CONN. TISS. ST	67	1.32	70	1.44	137	1.38
C50	BREAST	16	0.32	1411	28.96	1427	14.32
C51	VULVA	-	-	9	0.18	9	0.09
C52	VAGINA	-	-	27	0.55	27	0.27
C53	CERVIX UTERI	-	-	502	10.30	502	5.04
C54	CORPUS UTERI	-	-	128	2.63	128	1.28
C55	UTERUS, NOS	-	-	24	0.49	24	0.24
C56	OVARY	-	-	237	4.86	237	2.38
C57	OTH. FEM. GEN. ORGANS	-	-	4	0.08	4	0.04
C58	PLACENTA	-	-	3	0.06	3	0.03
C60	PENIS	29	0.57	-	-	29	0.20
C61	PROSTATE	151	2.97	-	-	151	1.52
C62	TESTIS	27	0.53	-	-	27	0.27
C63	OTH. UNSPED. MALIG. M.G. ORGN.	2	0.04	-	-	2	0.02
C64	KIDNEY	62	1.22	16	0.33	78	0.78

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C65	RENAL PELVIS	2	0.04	2	0.04	4	0.04
C66	URETER	2	0.04	1	0.02	3	0.03
C67	URI. BLADDER	102	1.22	11	0.23	113	2.00
C68	OTH. URI. ORG.	6	0.12	2	0.04	8	0.08
C69	EYE & AD. VEXA	11	0.22	9	0.18	20	0.20
C70	MEN. NGES	-	-	1	0.02	1	0.01
C71	BRAIN	153	3.01	110	2.26	263	2.64
C72	MN. SC & OTHER CNS.	4	0.08	2	0.04	6	0.06
C73	THYROID	142	2.79	485	9.96	627	6.28
C74	ADRENAL GL.	9	0.18	8	0.16	17	0.17
C75	OTH. ENDO. G.	1	0.02	3	0.06	4	0.04
C76	ILL. DEF. SIT	12	0.24	4	0.08	16	0.16
C77- C80	M.N ILL. DEFINE SECONDARY & USS	213	4.18	129	2.65	342	3.43
C81- C85	LYMPHOMAS	310	6.09	157	3.22	467	4.69
C90- C96	LEUKEMIAS - INCL. M.M	555	10.90	357	7.33	912	9.15
	<b>TOTAL</b>	<b>5091</b>		<b>4872</b>		<b>9963</b>	
D00- D09	in situ neoplasms (all sites)	11	1.46	38	13.06	49	12.60
D10- D36	Benign Neoplasms (all sites)	61	53.17	112	38.49	163	42.12
D37- D48	Neoplasms - Uncertain or unknown behaviour (all sites)	34	35.92	39	13.40	73	18.86
O01	Vesicular Mole	-	-	102	35.05	102	26.36
	<b>TOTAL</b>	<b>96</b>		<b>291</b>		<b>387</b>	
R69	Diagnosis deferred other than above	495		472		967	
	<b>GRAND TOTAL</b>	<b>5682</b>		<b>5635</b>		<b>11317</b>	

Regional Cancer Centre, Thiruvananthapuram

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### Pharmacy

During the reporting period the pharmacy handled medicines for an amount of Rs.20,79,08,443/-. Anti cancer medicines worth of Rs.12,09,978/- have been issued free to cancer patients belonging to low socio-economic status and treatment protocol recommended by academic forum of the Centre. They are ALL-107, Lymphoma-70, GC-6, Wilm's tumour-7, Testicular-5 and Dysgerminoma-2. Other medicines worth of Rs.2,78,380/- were also issued free of cost to poor patients.

### Cancer Care for Life scheme

During the period, 155 new patients reported for treatment under Cancer care for Life scheme. Of this, 147 had confirmed diagnosis of malignancy. Out of this 100 patient belong to scheme-I, 31 patients belongs to Scheme II, and 16 patients belonged to Scheme III. Average amount spent per patients is Rs.76,350/-. Rs.1,12,24,376/-† was spent towards the cost of investigations, treatment etc.Rs.33,54,090/-† was collected through new memberships.

† - Unaudited figure

### Student training:

- 22 students of MA/MSW from various universities were posted 1 week in this section for training in clinical service activities.

We acknowledge with thanks Board of Directors, SDM, California, Sirdi Sai Trust, Madhyamam, Melam Masala, Asraya, Care Plus, Prathyasa and various individuals who have helped for the treatment/welfare of poor patients. The Mar Gregories Karunya Nilayam, Kottayam has sponsored the treatment cost of 100 patients in the Paediatric Oncology wing.

### Conferences attended

**Mr. Raveendran Nair R.**  
Silver jubilee conference of the National Institute of Personnel Management, Kovalam, Kerala. 6 - 10 September 2007.

**Mrs. Chandrika D.**  
8<sup>th</sup> annual National Medical Records Conference (MEDRECON 2008), Madras Medical Mission, Chennai, Tamil Nadu. 6 - 11 February 2008.

### Public Relations Activities

Public relations activities were centered around awareness and exposure management. Apart from public relations activities, this office has been supervising the security wing, telephone exchange, information counter and help desk. Health communication through print

electronic media was another area of activity. Co-ordination of raising activities of the Centre with the support of the philanthropic organisation and viewers of 'Mukthi', the cancer awareness programme on Kairali TV is being continued. The Centre had launched a unique programme "Akshayapathram" the poor patient's welfare fund for food and medicine. Free food is being served to more than 200 poor patients in the ward since November 2007 and this programme is going successfully. A brochure on Akshayapathram has been printed and distributed among well wishers.

Public Relation activities were instrumental in enhancing the membership with the unique campaign focused on NGOs and other charitable organizations. As part of advertisement, display boards and hoardings were installed in RCC and its outreach centres at Palaghat and Emakulam.

Cancer Care for Life campaign were conducted at Ayyankunnu-Kannur, Rotary Club-Trivandrum, Orbit-Vazhuthacaud, and Chikitsa Sahayi- Vallanad, Trivandrum.

"Mukthi" in Kairali is continuing as the longest cancer awareness programme in Television.

The Centre, its doctors and scientists have sufficient exposure to the media in the form of articles, talks, interviews, phone in programmes etc. Public function and VIP visits were managed and coordinated.

### Awards/Honours

#### Mr. V. Surendran Nair

Won the Best Science Journalist Award instituted by Kerala State Council for Science, Technology and Environment.  
Elected as the Joint secretary, Public Relations Society of India.

## LIBRARY AND INFORMATION SERVICES

M.Chandrakumaran Nair Senior Library & Information Officer

Access to information rather than possession has become prime focus today in view of the increasing availability of virtual information resources and progress in network technologies. The division continued all its activities to provide effective information support for patient management, research and PG programmes, training, research projects and for all other academic activities of the Centre. We are moving with a mission to establish up-to-date infrastructure facilities which will support timely dissemination of information. The library is carrying out a wide spectrum of information services to the users to update themselves with latest trends in their respective fields.

### Progress in collection of library resources

As in previous years, high priority has been accorded to the subscription to journals and 11 journals were added for the calendar year 2007 in the context of increasing academic programmes. Library subscribed to 115 journals of which 80 titles were international. The following are the additions to the resourceful collection during the report year and all the materials have been technically processed and added to the databases concerned for extensive use.

Table 39 : Collection Development

Document type	Additions	Collection as on March 2008
Books, monographs and Backvolumes	471	10831
Current Journals	11	115
Reprints and reports	201	5657
CD ROMs/DVDs	26	278

### IP based access to journals

IP based full text access to more number of journals were provided during the year. In addition to Elsevier's Science Direct service, John Wiley, Blackwell, Oxford etc also provided IP based access to their journals in their online platforms. More than 100 free online journals in the Centre's

subjects of interest were selected from various sites and made available in the favourites group with sufficient notification for wide use.

### Digital Library Services

As part of digital library, the work relating to digitization of publications of the Centre since 1981 is in fast progress. The division continued its digital library services like, RCCL Current Contents, Oncorews, Press releases, Conference Alert, Reprint Service etc., on intranet. Full text CD/DVD resources were added to the CD mirror server digital library system for multiuser access.

### Library Hours

In order to meet the demand arised out of the increasing academic activities, working hours of library has been extended to 8 pm during the report year.

### Publication of Annual Report

The division continued the compilation and editing work of Annual report of the Centre. The work relating to the publication of the report for 2006-07 in English and Hindi was completed and copies were distributed to the concerned.

### Library Committee

The Library Committee met three times during the report period and decisions were taken on various issues relating to the library. The major issues discussed were the Upgradation of digital library services, physical verification of books and other materials done, and Revision of website etc.

### Information sharing and Access to Delnet

In order to meet the increasing demand for information requirements, the division continued its interaction with national/international organizations/agencies. In the case of journals not available in the library, more than 200 reprints were collected on request from the authors concerned free of cost. Library also renewed subscription to membership to Delnet.

### Access to INIS/Cochrane

RCC continued the free access facility to International Nuclear Information System(INIS) database of IAEA which now carries about 2.9 million abstracts and indexed records and a comprehensive collection over 8 lakh full text documents including Nuclear Medicine, Radiation Physics, Energy and Environment. The Cochrane library, the Evidence-based

health care database, is also accessible freely with the sponsorship of Indian Council of Medical Research.

#### External users/ Project students /Trainees

There has been heavy use of library materials by students and trainees who come from various institutes in India for project work and training. A number of PG students and researchers from Medical College, University Departments and other organizations visited the library for reference and consultation. Library also continued to provide audio-visual support to all the programmes conducted.

#### Workshops/ Seminars/ Training attended

##### Mr. M. Chandrakumaran Nair

Seminar on Knowledge Resource Management (KRM2007), Tata Memorial Hospital, Mumbai. 3-4 August 2008.

Libraries on the Agenda : International Seminar on Library advocacy Max Mueller Bhavan, New Delhi. 13 - 14 March 2008.

##### Mr. Vishnu.V

Training programme on biomedical information retrieval for medical information professionals/medical librarians, New Delhi. 23-27 July 2007.

## INFORMATION SYSTEMS

Mrs. Neelima N.      Systems manager  
Mr. Rajesh P.        Systems analyst  
Mr. Shaji J.          Systems analyst

This division continued to provide quality services in maintaining computers and in building the Hospital Information System.

## INFRASTRUCTURE

<b>Hardware :</b>	Xeon Servers	-	6 Nos
	Pentium IV Server	-	7 Nos.
	Personal Computers	-	300
	Thin clients	-	80
<b>Software:</b>	Application Server	-	Oracle 10 g
	Database	-	Oracle 10 g, Ingress 6.4
	Reports	-	Oracle Reports
	Operating Systems	-	Enterprise Linux 3.0, Windows 2003, Windows 2000, Windows XP
	Firewall	-	Trend Micro

#### Network:

Connected the entire campus with 400 access points.

During the report year, the division maintained 22 modules of Hospital Information System. In addition to this, applications were developed for Surgical Oncology (Doctors Logbook), Microbiology Lab and Chemotherapy ward.

#### Telemedicine Applications

OME Programmes transmitted to various centers across India through Telemedicine network

Continuing Medical Education Programmes	-	30
Panel Discussions	-	19
Nurses Training programmes	-	12
Talks by doctors of RCC	-	15
CANCER AWARENESS (Through Media)	-	03



<b>Reception</b> <ul style="list-style-type: none"> <li>○ OP and IP Billing (including Credit Card acceptance)</li> <li>○ Consultation</li> <li>▪ Consultation notes</li> <li>▪ Case sheet images</li> <li>▪ Service ordering and scheduling</li> <li>▪ Reports viewer</li> <li>○ Chemotherapy Management &amp; Scheduling</li> <li>○ Radiation Treatment Scheduling</li> <li>○ Surgical scheduling and management</li> </ul>	<ul style="list-style-type: none"> <li>○ Laboratory Information System</li> <li>▪ Clinical Laboratory</li> <li>▪ Imageology (Radiology)</li> <li>▪ Pathology</li> <li>▪ Nuclear medicine</li> <li>○ Pharmacy</li> <li>○ Ward Management</li> <li>○ Purchase &amp; Central Store</li> <li>○ Service Ordering and scheduling</li> <li>○ CSSD</li> <li>○ Microbiology</li> </ul>
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**Major CME programmes Received**

1. AROI annual conference from RCC, Ahmedabad
2. Multi modality Head and Neck cancer care in new millennium, TATA Memorial Hospital, Mumbai.
3. Teleconference of National Board for the DNB Students and doctors using VLC player.

**Follow-up of Patients through Onconet**

Patients returning home after initial treatment from RCC could communicate their post treatment problems and results of investigations from nodal centers. The doctors at RCC could also be able to render advice on a real time basis for terminally ill patients who require only palliative care. Besides helping patients for follow-up visit, the online facility boosted the confidence of the cancer patients by providing counseling. Apart from RCC patients, the public as well as doctors of other institutions also availed services of ONCONET.

**Patients attended Telemedicine Clinics:**

□ Follow up consultation	1265
□ Early Cancer Detection	956

**Telepathology Clinic**

In the current year RCC took initiative for the telepathology consultations between Kannur and Kochi Early Cancer Detection Centres.

**Ongoing Research Projects**

Development of data management system for oncology with special reference to RCC. (Funded by: CDAC, Government of India)

Principal Investigator: Mrs. Neelima N

'ONCONET: cancer care for rural masses'. (Funded by: Ministry of Information Technology, Government of India; ISRO; C-DAC, Trivandrum)

'GARUDA\* – National Grid Computing Initiative'. (Funded by: CDAC, Pune; ERNET, Government of India)

**Conference/meeting attended**

Mrs. Neelima N., Mrs. Jayanthi J.K.

Developing Applications for GARUDA (DAG07), Jawaharlal Nehru University, New Delhi. 4 - 6 October 2007.

Garuda Partners Meet, Bangalore. 3 - 4 March 2008.

## EARLY CANCER DETECTION CENTRE (ECDC), ERNAKULAM

Dr. Latha, A

Smt. C.Radha

Smt. Mercy Joseph

Cytopathologist

Sr. Gr. Cytotechnologist

Sr. Gr. Cytotechnologist

The overall activities of the Early Cancer Detection Centre, Ernakulam during the report year were as follows:

1. Cancer screening clinic every day at ECDC, Ernakulam.
2. Cancer screening camps in rural and urban areas with assistance from non-Governmental and Governmental organizations.
3. Cancer awareness programmes to public and members of Kudumbasree unit.
4. Monthly follow up clinics of RCC treated patients at ECDC, Ernakulam.
5. Telemedicine facility for Cancer Patients, awareness classes for public and videoconferencing.
6. Provide Cytology, and Haematology diagnostic facilities for materials send from other medical centers and also from ECDC Palakkad.
7. Colposcopy for patients of this centre as well as from referral centres.

Table 41 : Resums of work done

	Centre	Camp	Total
1. Persons screened	7206	2950	10156
2. Cervical smear	3256	1375	4631
3. Oral Smear	383	49	432
4. Fine Needle Aspiration Cytology	2183	507	2690
5. Sputum Cytology			66
6. Colposcopy	66		3
7. Body fluids	3		150
8. Peripheral Blood Smear	124	26	20
9. Cancer Detection Camp	18	2	37
10. Awareness Class	37		34

Table 42 : Gynaecological cytology

Sl. No.	Lesion	Centre	Follow up	Camp	Total
1.	Normal	324	127	379	830
2.	Inflammation	1133	442	585	2160
3.	Atypical glandular cell	147	37	40	224
4.	Trichomonas Vaginalis infection	480	122	223	825
5.	T.V with Dysplasias	85	28	40	153
6.	Fungal infection	59	20	38	117
7.	Fungal Infection with atypia	20	4	4	28
8.	Human Papil oma Virus infection	3	...	1	4
9.	Human Papilloma Virus with atypia	2	...	...	2
10.	Herpes Simplex Virus	10	8	5	23
11.	Viral infection with Dysplasias	5	5	3	14
12.	Mixed infection	71	23	28	122
13.	Mixed infection with Dysplasias	19	16	20	55
14.	Mild Dysplasia	13	12	6	31
15.	Moderate Dysplasia	4	2	2	8
16.	Severe Dysplasia	2	2	...	4
17.	Carcinoma In-situ	2	1	1	4
18.	Autolytic atrophy	2	...		2
19.	Invasive Squamous Cell carcinoma	13			13
20.	Adenocarcinoma	8	2		10
21.	Radiation changes	2			2
	<b>Total</b>	<b>2404</b>	<b>852</b>	<b>1375</b>	<b>4631</b>

**Table 43 : Non-gynaecological cytology**

ORAL LESION				SALIVARY GLAND			
	Centre	Camp		Centre	Camp		
1. Benign	288	47	1. Benign	59			
2. Pre-malignant	33	2	2. Malignancy	1			
3. Suspicious			Total	60			
4. Malignancy	61						
Total	383	49					
SPUTUM				OTHER SITE			
1. Benign	57		1. Benign	226	133		
2. Suspicious	...		2. Suspicious	...			
3. Malignancy	9		3. Malignancy	6			
Total	66		Total	232	134		
BREAST							
BODY FLUIDS				NIPPLE DISCHARGE			
1. Benign	656	75	Benign	114	26		
2. Suspicious/atypia	49	1	Suspicious	2			
3. Malignancy	117	4	Total	116	26		
Total	822	80					
THYROID				ASCITIC FLUID			
1. Benign	657	266	Malignancy	1			
2. Suspicious/atypia	75	4	PLEURAL FLUID				
3. Malignancy	24		Benign	7			
Total	756	270	Malignancy	...			
LYMPHNODE				PERIPHERAL BLOOD SMEAR			
1. Benign	243	12	Benign	17	2		
2. Malignancy			Suspicious	1			
Primary	9	2	Total	18	2		
Secondary	61	4					
Total	313	18					

**EARLY CANCER DETECTION CENTRE  
(ECDC), PALAKKAD**

Dr. I. B. Sulekha Medical Officer

The Early Cancer Detection Centre, Palakkad, one of the peripheral centers of RCC, Thiruvananthapuram is located at Kanjikode, 8 km east of Palakkad town.

The main activities of this Centre are:

Creating cancer awareness among the public and screening them for warning signals of cancer. The screening is being done at the centre (for referred cases and patients coming voluntarily) and by conducting cancer detection camps in various places with the help of voluntary organizations.

Every Thursdays the staff nurse attends, Gynaec OP, District Hospital, Palakkad to take PAP smear with the permission of the Superintendent and co-operation of staff of Gynaec OP.

Palliative care treatment was also given by the centre.

Our staff attend exhibitions conducted in Palakkad with the posters available in this institutions.

Detected cancer cases were referred to RCC or other institutions for expert management.

**Table 44 : Resume of work done**

1. No. of persons screened	8923
a) ECDC	1964
b) CAMP	6959
2. No. of smear taken	2411
a) ECDC	682
b) CAMP	1729
3. No. of camps conducted	36
4. No. of Railway passes issued	188
5. No. of Medical Certificates issued for pension	146
6. No. of Awareness classes conducted	39
7. Total cases referred	106
a) To RCC	87
b) To other institution	19
8. No. of home visits conducted	8
9. No. of pain clinical registered	23
10. No. of Telemedicine consultation	39
11. No. of exhibitions conducted in Palakkad	3

**Table 45 : Details of cytological specimens screening**

Sl.No.	Nature of Specimen	ECDC	CAMP	Total
1.	Cervical smear	609	1689	2298
2.	Oral Smear	18	10	28
3.	Sputum	18	1	19
4.	Breast (FNAC)	19	8	27
5.	Thyroid (FNAC)	Nil	9	9
6.	Lymph node (FNAC)	8	3	11
7.	Nipple Discharge	2	1	3
8.	Fluid	1	--	1
9.	FNAC other sites	5	11	16
10.	Scrape smear others	2	--	2
	<b>Total</b>	<b>682</b>	<b>1729</b>	<b>2411</b>

**Table 46 : Details of Gynaecological specimens screening**

Sl.No.	Nature of Specimen	ECDC	CAMP	Total
1.	Normal	155	736	891
2.	Inflammation	275	469	744
3.	Fungal Infection	8	22	30
4.	Squamous Metaplasia	20	20	40
5.	Trichomonas Vaginalis Infection	63	199	262
6.	Herpes Simplex Viral Infection	3	2	5
7.	Human Papilloma Virus Infection	1	1	2
8.	Endocervicitis	29	120	149
9.	Glandular Cell Atypia	19	54	73
10.	Mixed Infection	26	57	83
11.	Mild Dysplasia	3	3	6
12.	Moderate Dysplasia	1	1	2
13.	Severe Dysplasia /Ca-in-situ	2	2	4
14.	Squamous cell carcinoma	3	--	3
15.	Poorly Differentiated Carcinoma	--	--	--
16.	Adeno Carcinoma	1	--	1
	<b>Total</b>	<b>682</b>	<b>1729</b>	<b>2411</b>

**Table 47 : Non -Gynecological Smears**

Sl.No.	Lesion	ECDC	CAMP	TOTAL
<b>1. Oral Smears</b>				
1.	Normal	15	7	22
2.	Pre malignant	3	3	6
3.	Malignant	Nil	Nil	Nil
	<b>Total</b>	<b>18</b>	<b>10</b>	<b>28</b>
<b>2. Sputum Cytology</b>				
1.	Non Malignant	18	1	19
2.	Malignant	Nil	Nil	Nil
	<b>Total</b>	<b>18</b>	<b>1</b>	<b>19</b>
<b>3. Breast (FNAC)</b>				
1.	Benign	15	7	22
2.	Malignant	4	1	5
	<b>Total</b>	<b>19</b>	<b>8</b>	<b>27</b>
<b>4. Thyroid</b>				
1.	Benign	Nil	9	9
2.	Malignant	Nil	Nil	Nil
	<b>Total</b>	<b>Nil</b>	<b>9</b>	<b>9</b>
<b>5. Lymphnode (FNAC)</b>				
1.	Benign	5	2	7
2.	Malignant	3	1	4
	<b>Total</b>	<b>8</b>	<b>3</b>	<b>11</b>
<b>6. Nipple Discharge</b>				
1.	Benign	1	1	2
2.	Malignant	--	--	--
	<b>Total</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b>7. Fluids</b>				
1.	Benign	1	1	2
2.	Malignant	1	--	1
	<b>Total</b>	<b>1</b>	<b>--</b>	<b>1</b>
<b>8. Other Sites</b>				
1.	Benign	4	--	4
2.	Malignant	1	--	1
	<b>Total</b>	<b>5</b>	<b>11</b>	<b>16</b>

**Pain clinic**

New cases registered	: 23
Step I	: 4
Step II	: 2
Step III	: 17
Number of follow up cases	: 57

## NATURAL BACKGROUND RADIATION CANCER REGISTRY (NBRR), KARUNAGAPPALLY

Dr. P. Jayalekshmi Lecturer & Officer-in-charge

Natural Background Radiation Cancer Registry was started in 1990 with a special purpose to study the health effects of natural radiation present in the sea coast of Karunagappally taluk of Kollam district Kerala. Statistical analysis of the data using Epicure showed there was no increased cancer incidence with regard to radiation levels and also in-depth dosimetric measurements. Follow up of mortality and morbidity of the radiation cohort and control cohort was also continuing by including the whole Karunagappally taluk as cohort I and cohort II. Migration survey was conducted in this regard during the current year.

Cancer registry covering whole Kollam district was initiated last year and the registration was strengthened, covering more than 200 sources including 71 panchayats, 1 corporation and 2 municipalities. More than 2500 cancer cases were identified in 2007.

Cancer control activities, Pain and palliative care clinics and review check ups were regularly done with the aid of tele-linking facilities. Rehabilitation services and home care of the advanced patients were also be offered from this unit.

6256 female cashew workers were screened for cancer detection in Kollam district, among them 9 cancer cases were identified and more than 300 persons were identified with pre-cancerous conditions.

### CLINICAL ACTIVITIES

Table 48 : Clinical activities and patient services

Patient services	No	No. of persons attended
Follow-up clinics conducted for treated cancer patients.	7	558
Cancer awareness classes.	8	3016
Field clinics	23	8216
Cervical screening camps	31	3120

Regional Cancer Centre, Thiruvananthapuram

Oral scrape & Sputum	84	84
Cancer cases detected	10	---
Patients attended in pain clinics	---	1400
Cancer Training Programme	1	104
Home Care Services	79	79

### Ongoing Research Projects

Dosimetric studies in High Background Radiation Area, Karunagappally. (Funded by: Health Research Foundation, Kyoto, Japan)

Co-investigator: Dr. Jayalekshmi P.

District Cancer Registry: Kollam. (Funded by: NCRP-ICMR, Bangalore)

Principal Investigator: Dr. Jayalekshmi P.

Cytogenetic studies in High Background Radiation Area, Karunagappally. (Funded by: Health Research Foundation, Kyoto, Japan)

Co-investigator: Dr. Jayalekshmi P.

Human Papilloma Virus associated cancers in Natural Background Radiation Area of Kerala: Evaluation of HPV genotypes in relation to radiation exposure levels. (Funded by: Department of Epidemiology and Preventive Medicine, Kagoshima University, Japan)

Co-investigator: Dr. Jayalekshmi P.

Thyroid nodularity studies in High Background Radiation Area. (Funded by: Health Research Foundation, Kyoto, Japan)

Co-investigator: Dr. Jayalekshmi P.

Cancer control projects and Pain and palliative care projects: LAD.

Cancer detection among cashew workers of Kollam, Kollam Jilla Panchayat.

### Conference attended, paper presented

Dr. Jayalekshmi P.

National Conference on 'Emerging Issues in Public Health'. Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram. 11 - 13, January 2008.

Paper presented: 'High natural radiation and cancer in Karunagappally'.

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**2007 – 2008**

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## NON-ACADEMIC STAFF STRENGTH

### ADMINISTRATIVE STAFF

Position	No.	Position	No.
Registrar	1	cum Receptionist	1
Controller of Finance	1	Clerk Gr. I	7
Administrative Officer	1	Clerk	8
Administrative Officer (Clinical Services)	1	Typist	3
Accounts Officer	1	Coding Clerk	1
Purchase Officer	1	Clinical Records Assistant	9
Public Relations Officer	1	Dark Room Assistant Gr. I	1
Asst. Administrative Officer	1	Driver Sel. Grade	1
Asst. Accounts Officer	1	Driver Sr. Gr.	3
Asst. Internal Audit Officer	1	Driver	2
Junior Personal Assistant	5	Senior Helper	13
Office Assistant Sr. Gr.	4	Senior Animal Housekeeper	2
Office Assistant	6	Hospital Attender	6
Cashier Gr. I	2	Helper	6
Cashier cum Receptionist	1	Despatcher	2
Telephone Operator	1	Security Guard (Temp)	14
		Security Guard (Daily wage)	7
		Gardner	1

### TECHNICAL AND SCIENTIFIC STAFF

Position	No.	Position	No.
Nursing Supdt. Gr. II	1	Cytotechnologist	2
Scientific Officer Gr. I	1	Social Investigator Gr. 1	1
Medical Records Officer	1	Social Investigator Sr. Gr. 1	1
Technical Officer	7	Library Assistant Gr. I	1
Scientific Officer	1	Library Assistant	1
Nursing Supervisor	2	Audio Visual Operator	1
Resident Medical Officer	6	Dietitian Gr. I	1
Cytopathologist (ECDC, EKM)	1	Staff Nurse	121
Cytotechnician Sel. Gr.	2	Staff Nurse Grade I	36
Cytotechnologist Sr. Gr.	3	Head Nurse Gr. 1	4

Position	No.	Position	No.
Head Nurse	13	Systems Manager	1
Radiographer Sr. Gr.	6	Protocol Nurse	1
Radiographer Sel. Gr.	15	Pharmacist	2
Radiographer	26	Pharmacist Gr. 1	1
Lab. Technician	17	Mould Room Technician Sr. Gr.	1
Lab. Technician Sr. Gr.	2	Anaesthesia Technician Gr. 1	1
Lab. Technician Sel. Gr.	6	Theatre Technician Gr. 1	1
RIA Technician	1	Data Entry Operator Gr. 1	3
RIA Technician Sr. Gr.	3	Data Entry Operator	5
Asst. Programmer	1	Research Assistant	1
Systems Analyst	1	Project Assistant	1

### ENGINEERING STAFF

Position	No.
Chief Maintenance Engineer	1
Maintenance Engineer	1
Supervisor (Electrical)	1
Supervisor (Electrical) Sr. Gr.	3
Electrician Gr. I	1
Electrician	3
Electronic Technician	1
Electronic Technician Gr. I	1
Technical Assistant	1

*Best Wishes*

**RCC BID FAREWELL TO THE FOLLOWING  
STAFF MEMBERS DURING 2007-2008**

- |    |                          |  |
|----|--------------------------|--|
| 1. | Smt. Annamma Jacob       | Nursing Supervisor                           |
| 2. | Smt. Leela M.            | Technical Officer                            |
| 3. | Smt. T.G. Radhamani Amma | Technical Officer                            |
| 4. | Sri. Thankappan Nair K.  | Telephone Operator cum<br>Receptionist Gr. I |
| 5. | Sri. Nandakumaran Nair   | Clerk  |
| 6. | Sri. Sahadevan B.        | Security Guard                               |
| 7. | Sri. Appakutty Asari     | Helper                                       |

*RCC wish them a very happy and prosperous life*

**ACCOUNTS  
2007-2008**



REGIONAL CANCER CENTRE SOCIETY  
BALANCE SHEET AS ON

Previous Year		Sch No.	Liabilities	Current Year	
Rs	Ps			Rs	Ps
689000792.10		I	Capital Fund		
7663109.40		II	Specific Funds	792984549.52	
84507405.98			CCL Fund	11150609.02	
494273.00		III	Adv. Received For Research Projects	67860595.98	
38516435.88			Secured Loans	484581.00	
			<b>CURRENT LIABILITIES AND PROVISIONS</b>	0.00	
31452894.10		IV	Current Liabilities -others	39116368.84	
30000000.00			Provision For Gratuity	26500000.00	
36615272.40		V	Creditors For Goods Supplied	38353479.25	
346723291.37		VI	Provision For Depreciation	403457584.28	
1254973474.22			<b>TOTAL</b>	1379607768.70	

XIV Significant accounting policies  
XV Notes on accounts  
Schedules I to XIV form an integral part of this Balance Sheet.

Dr.K. Ramachandran  
Director

Thiruvananthapuram,  
23.12.2008

TRIVANDRUM (Reg. No. 567/81)  
31st MARCH 2008

Previous Year		Sch No.	Assets	Current Year	
Rs	Ps			Rs	Ps
686946848.64		VI	Fixed Assets	780930636.08	
2250164.00			Capital Work-in-progress	0.00	
136441987.00		VII	Investments	124735448.00	
			<b>CURRENT ASSETS AND LOANS AND ADVANCES</b>		
23964102.00		A	Closing Stock	25617884.00	
12408919.57		VIII	Advances Others	11038579.40	
23132802.38		IX	Investigation Fees Receivable	65294071.82	
428811.77		X	Balance With Banks	2081824.16	
887400.35		XI	Cash In Hand	629025.43	
368512638.51		XI	Income & Expenditure A/c	379270328.73	
1254973474.22			<b>TOTAL</b>	1379607768.70	

Vide our report of even date attached

Uma Maheswary K.  
Controller of Finance

For **SANTHOSH ALEXANDER & ASSOCIATES**  
Chartered Accountants

Santhosh Alexander, FCA.,  
M. No. 207251, Partner

**REGIONAL CANCER CENTRE SOCIETY  
Income and Expenditure Account**

Previous Year		Sch No.	Expenditure	Current Year	
Rs	Paise			Rs	Paise
20180535.00			Opening Stock	23984102.00	
152274902.82		A	Purchases Medicines Chemicals Etc.	207207826.88	
444851964.91		B	Salaries And Allowances	137398357.27	
199472.00			Uniform And Liveries	549749.00	
588596.00		C	Rent, Rates & Taxes	310114.00	
667344.00		D	Postage, Telephone & Telegrams	815521.50	
251464.50		E	Travelling Expenses	257368.00	
1133517.27			Printing & Stationery	913430.00	
115251.80			Advertisement Charges	178246.00	
12281880.00		F	Electricity And Water Charges	13944734.00	
2000106.82		G	Repairs & Maintenance	6408544.52	
3794851.60		H	Service Contract Charges	4142635.75	
160000.00			Audit Fees	170000.00	
1163631.00		I	Computer Expenses	421049.00	
6703.00			Books & Periodicals	9941.00	
1316202.00			Expenses To Mr	1604465.00	
114811.50		V	Miscellaneous Expenses	169518.00	
2158675.99			Housekeeping Expenses	2511478.50	
49138917.41		VI	Depreciation	56734292.91	
794391.37			Advances Written Off	0.00	
1689141.50			Deep Expenditure	1700000.00	
394842358.29		Total		456099373.33	

XIV SIGNIFICANT ACCOUNTING POLICIES

XV NOTES ON ACCOUNTS

Schedules A to L, XII, XIII and XIV form an integral part of this Statement.

Auditor's Report

This is the Income and Expenditure Account referred to in our report of even date.

**Trivandrum (Reg. No. 567/81)  
for the Year Ended 31.03.2008**

Previous Year		Sch No.	Income	Current Year	
Rs	Paise			Rs	Paise
65040480.00			Grant-in-aid; Govt Of Kerala	60264790.58	
305000.00			Deep Grant Received	1700000.00	
136649804.70			Investigation Fees	151222308.70	
150442555.86			Medicine Receipts	205967350.79	
1448790.30			Interest Income	4717056.90	
1318137.00		K	Training Fees	2114472.00	
4483487.08		L	Miscellaneous Income	1061347.14	
23964102.00		A	Closing Stock	25617884.00	
21190181.85			Excess Of Expenditure Over Income	5544163.22	
394842358.29		Total		459099373.33	

**Dr.K. Ramachandran**  
Director

**Uma Maheswary K.**  
Controller of Finance

For **SANTHOSH ALEXANDER & ASSOCIATES**  
Chartered Accountants

Thiruvananthapuram,  
23.12.2008

Santhosh Alexander, FCA.,  
M. No. 207251, Partner

Schedule VI

THE REGIONAL CANCER CENTRE SOCIETY

Item	Cost as on 01.04.2007	Gross Block		
		Additions	Deduction	Cost on 31.3.2008
Land	1000.00			1000.00
Buildings	148209712.50	5924835.42	0.00	154134547.92
Civil works	127118.63	0.00	0.00	127118.63
Cobalt unit	18123455.30	0.00	0.00	18123455.30
Water supply and drainage	2114586.43	50000.00	0.00	2164586.43
Furniture and fittings	11391633.43	1366112.00	0.00	12759745.43
Office equipments	2583465.43	2228.00	0.00	2585693.43
Hospital & lab. Equipments	322271350.97	66878980.00	0.00	389150310.97
Electrical installation	38685460.00	1298028.00	0.00	39983488.00
Fire detection	3841120.00	0.00	0.00	3841120.00
Air conditioning	18048555.35	2514138.00	0.00	20562693.35
Computer hardware and software	3269433.00	1801441.00	0.00	4970874.00
Gas and cylinder	7414287.05	11522.00	0.00	7425809.05
Vehicles	835391.50	490054.00	0.00	1325445.50
Library books and journals	23116443.65	3250510.00	0.00	26366953.65
Lift and elevator	5913240.00	0.00	0.00	5913240.00
Assets (donations)	337612.00	0.00	0.00	337612.00
Telephone equipments	2955608.00	1355380.00	0.00	4310988.00
High energy linear accelerator	52587763.00	0.00	0.00	52587763.00
Assets-telemedicine project	7718623.00	0.00	0.00	7718623.00
Hospital equipments(project)	13389501.00	8238548.00	0.00	22528049.00
Low energy linear accelerator	3511489.40	0.00	0.00	3511489.40
<b>Total</b>	<b>686946848.64</b>	<b>93983757.42</b>	<b>0.00</b>	<b>780930606.06</b>

TRIVANDRUM (REG. NO. 567/81)

DEPRECIATION			NET BLOCK	As on 31.03.2007
Up to 31.3.07	Additions	Total upto 31.3.2008	As on 31.3.2008	
0.00	0.00	0.00	1000.00	1000.00
56224818.16	4445486.48	60670314.65	84464433.27	82985094.34
79150.31	2398.42	81548.73	45568.90	47938.32
11333116.88	1018550.79	12351667.47	5771787.83	6790338.62
1870527.15	44108.89	1914636.04	249950.38	244059.28
7000460.99	575928.44	7576389.43	6183356.00	439172.44
2027287.40	83758.40	2111056.80	474636.63	556166.03
150144979.75	35850799.68	185995778.43	203154531.54	172126371.22
32220314.48	1164475.17	33384790.63	6588658.27	6465146.44
3271439.63	95452.08	3366891.69	484228.31	569680.37
15161680.30	810152.11	15971832.41	4590881.54	2888875.05
3243604.76	976361.55	4219966.30	653907.70	25828.25
5732982.60	253923.97	5986906.57	1438902.48	1601304.45
228874.10	219314.30	448188.40	877257.20	806517.50
12884838.54	2022302.21	14907241.15	11459712.50	10231504.71
5154085.23	113873.97	5267954.20	645285.80	759159.77
304667.48	4941.68	309609.16	28002.84	32944.52
2500713.11	271540.93	2772254.04	1588731.88	454892.89
20446852.72	488166.54	25327819.26	27359343.74	32541110.28
3580665.12	623693.68	4184358.80	3534264.20	4157957.88
4332527.49	2744328.23	7076855.72	15551193.28	9056973.51
	541723.41	541723.41	3059735.89	3511489.40
<b>346723291.37</b>	<b>56734292.91</b>	<b>403457584.28</b>	<b>377473021.78</b>	<b>340223557.27</b>

**REGIONAL CANCER CENTRE SOCIETY**

Trivandrum (Reg. No. 667/81)

**CANCER CARE FOR LIFE SCHEME****Income and Expenditure Account for the year ended 31.03.2008**

INCOME	Rs. Ps.	EXPENDITURE	Rs. Ps.
Interest on FD & investments	6125709.00	Salaries & Allowances	138500.00
Excess of Expenditure over Income	5213527.00	Reimbursement to Patients	11099376.00
		CGL Stationery and Printing	101360.00
<b>TOTAL</b>	<b>11339236.00</b>	<b>TOTAL</b>	<b>11339236.00</b>

Dr.K. Ramachandran  
DirectorUma Maheswary K.  
Controller of FinanceFor **SANTHOSH ALEXANDER & ASSOCIATES**  
Chartered AccountantsSanthosh Alexander, FCA.,  
M. No. 207251  
PartnerThiruvananthapuram,  
23.12.2008**AUDITORS REPORT**

- We have audited the attached balance sheet of Regional Cancer Centre Society, Thiruvananthapuram as at 31.03.2008 and the Income and Expenditure Account for the year ended on that date together with the accounting policies and notes annexed thereto. These financial statements are the responsibility of the society's management. Our responsibility is to express an opinion on these financial statements based on our audit.
- We conducted our audit in accordance with auditing standards generally accepted in India. Those Standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.
- Further to our comments in the Annexure referred to above and subject to, Significant Accounting Policies No. 4 and Notes on Accounts No. 4.
  - We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit.
  - In our opinion proper books of accounts have been maintained by the Society.
  - The Balance sheet and Income and Expenditure account dealt with by this report are in agreement with the books of accounts.
  - Subject to our observations mentioned above, in our opinion and to the best of our information and according to the explanations given to us, the said accounts together with the notes thereon attached thereto give a true and fair view in conformity with the accounting principles generally accepted in India.
    - In the case of Balance sheet of the state of affairs of the society as at 31st March, 2008.
    - In the case of the Income and Expenditure account of the deficit of the society for the year ended on that date.

For **SANTHOSH ALEXANDER & ASSOCIATES**  
Chartered AccountantsSanthosh Alexander, FCA.,  
M. No. 207251  
PartnerTrivandrum,  
23.12.2008

**SIGNIFICANT ACCOUNTING POLICIES**

**1. Basis of Preparation of Financial Statements**

To prepare Financial Statements in accordance with the historical cost convention, Generally Accepted Accounting Principles ( GAAP ) in India and the Accounting Standards issued by the Institute of Chartered Accountants of India.

**2. Revenue Recognition**

To recognize income from services at the time of delivery of services. To recognize income from investments when the right to receive the income arises.

**3. Fixed Assets**

To state Fixed Assets at Original Cost of acquisition and subsequent improvements thereto inclusive of freight, duties and taxes and incidental expenses related to acquisition and installation. To include related preoperational expenses in respect of projects involving construction in the value of capitalized assets.

**4. Depreciation**

To provide depreciation on all the assets held, on the written down value method at the rates adopted by the Society. To provide for depreciation for the whole year in respect of assets put to use for a part of the year.

**5. Inventories**

To value all the inventories at lower of cost and net realizable value. Cost includes freight and other related incidental expenses and is computed on weighted average method.

**6. Borrowing Costs**

To capitalize the borrowing costs that are directly attributable to the acquisition or construction of that capital asset and to recognize other borrowing costs as expense in the period in which they are incurred.

**7. Government Grants**

To account for Government Grants received as Capital Receipts [Shown as Capital Fund in the balance sheet] to the extent such grants are applied for the acquisition or construction of Fixed Assets and to treat the balance (if any) as Revenue Income.

Dr.K. Ramachandran  
Director

Uma Maheswary K.  
Controller of Finance

For **SANTHOSH ALEXANDER & ASSOCIATES**  
Chartered Accountants

Thiruvananthapuram,  
23.12.2008

Santhosh Alexander, FCA.,  
M. No. 207251, Partner

**NOTES ON ACCOUNTS**

**1. Contingent Liabilities**

(a) Demand of Rs.90,26,490/- by the Corporation of Thiruvanthapuram towards property tax for the period upto 30/09/2002 is treated as a Contingent Liability and has not been provided for in the books of account.

(b) Demand by the Executive Engineer, Special Buildings,PWD amounting to Rs.3,45,615/-is treated as a Contingent Liability and has not been provided for in the books of account.

**2. Investigation**

Investigation Fee includes Registration, Ward Charges, Nuclear Medicine, Radiotherapy, Imageology, Surgery, and Lab fee.

**3. Interest on Treasury Deposits of CCL**

Interest on Deposits of the CCL with the Treasury is accounted on Cash Basis.

**4. Employee Benefits**

Provision for Leave Salary has not been done.

**5. Impairment of Assets**

There is no indication of impairment of assets as per AS-28

**6. Classification and Presentation**

Figures for the previous year have been regrouped and recast wherever necessary to suit the current year's layout.

Dr.K. Ramachandran  
Director

Uma Maheswary K.  
Controller of Finance

For **SANTHOSH ALEXANDER & ASSOCIATES**  
Chartered Accountants

Thiruvananthapuram,  
23.12.2008

Santhosh Alexander, FCA.,  
M. No. 207251, Partner

### CERTIFICATE OF UTILISATION

1. During the year 2007-08 the Regional Cancer Centre Society received Grant in Aid totaling Rs. 500 lacs from the Government of India as detailed below

Sl. No.	Details	Amount
1.	DD No.020902 dated 12.04.2007	1,00,00,000.00
2.	Vide RTGS on 16.10.2007	4,00,00,000.00
	Total	<u>5,00,00,000.00</u>

2. The amount was utilized as follows

Sl. No.	Purpose	Amount
1.	Acquisition of Hospital Equipments	5,00,00,000.00

3. We certify that the utilization mentioned under (2) above is true and correct as disclosed by the books of account of the society.

For **SANTHOSH ALEXANDER & ASSOCIATES**  
Chartered Accountants

Santhosh Alexander, FCA.,  
M. No. 207251, Partner

Thiruvananthapuram,  
23.12.2008

Regional Cancer Centre, Thiruvananthapuram

### CERTIFICATE OF UTILISATION

1. During 2007-2008, the Regional Cancer Centre Society received Grant in Aid totaling Rs. 950 Lakhs from the Government of Kerala as detailed below.

Installment	G.O Numbers	Date	Amount (Rs.in Lakhs)
1	GO(Rt) No.1514/2007/H&FWD	28.04.07	9000000
2	GO(Rt) No.2571/2007/H&FWD	13.07.07	18000000
3	GO(Rt) No.2962/2007/H&FWD	21.08.07	35000000
4	GO(Rt) No.3478/2007/H&FWD	10.10.07	8000000
5	GO(Rt) No.4009/2007/H&FWD	27.11.07	8000000
6	GO(Rt) No. 537/2008/H&FWD	12.02.08	12000000
7	GO(Rt) No.1116/2008/H&FWD	28.03.08	5000000
TOTAL			95000000

2. The amount was utilized as follows

Sl	Purpose	Amount
1	Acquisition of Assets	34745209.42
2	Education, Research and Subsidised Treatment	15254790.58
3	Operational Expenditure	45000000.00
Total		95000000.00

3. We Certify that the utilization mentioned under (2) above is true and correct as disclosed by the Books of Account of the Society.

For **SANTHOSH ALEXANDER & ASSOCIATES**  
Chartered Accountants

Santhosh Alexander, FCA.,  
M. No. 207251, Partner

Thiruvananthapuram,  
23.12.2008

Regional Cancer Centre, Thiruvananthapuram



AJITH KUMAR T. B.Com, FCA  
CHARTERED ACCOUNTANT

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Vattiyookavu P.O., Trivandrum - 695 013,  
Telephone : 0471 2495839  
Mobile : 9349990489  
E-mail: ajithkumarca@yahoo.com

### AUDITOR'S REPORT

I have audited the accounts of the Foreign Contribution for Research Projects of the Regional Cancer Centre Society, registered as per T.C Literary Scientific and Charitable Societies Regulation Act XII of 1955 (Reg.No.567/81) with registered office at Medical College P.O, Thiruvananthapuram-695011, Kerala State for the year ending 31st March, 2008 and relevant books and vouchers and certify that according to the audited accounts,

1. The brought forward foreign contribution at the beginning of the financial year 2007-2008 was Rs.1,11,91,306.07.
2. Foreign Contribution worth Rs.1,10,86,249.89 with interest of Rs.2,47,913.00 were received by the Association during the year ended 31st March,2008.
3. The balance of unutilized foreign contribution with the association at the end of the financial year 2007-2008 was Rs.1,29,32,979.56
4. Certified that the Association has maintained the accounts of foreign contribution and records relating thereto in the manner specified in section 13 of the foreign contribution (Regulation) Act, 1976 read with rule 8 (1) of the foreign contribution (Regulation) Rules, 1976.
5. The information furnished above and in the Balance Sheet and statement of receipts and payments are correct as checked by me.

Trivandrum,  
19<sup>th</sup> December,2008.

T. AJITH KUMAR B.Com, FCA  
CHARTERED ACCOUNTANT  
MEM. NO. 209348

### THE REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM (Reg. No. 567/81) Foreign contribution for Research Projects Balance Sheet as at 31st March 2008

LIABILITIES	Amount (Rs. Ps.)	ASSETS	Amount (Rs. Ps.)	Amount (Rs. Ps.)
CAPITAL FUND		FIXED ASSETS		
As on 1-4-2007	11580194.82	Computer		1608501.00
Add: Utilised During the Year for Fixed assets	3687.00	Printer & UPS		259426.00
	11563881.82	Fax Machine		51359.00
Add: Interest	1167216.00	Refrigerator		11953.00
		Deep Freezer	1275107.82	123674.00
Project Cell Payable		Vehicle		1407937.00
		FAN	460495.00	3687.00
		Furniture		608768.29
Project Balances as Per Schedule		Equipments		3526991.00
Research Funds as per Schedule		Air Conditioner		199689.00
		Photocopier	9781737.41	322735.00
		Building Addl. Facilities	3151242.15	785829.55

CURRENT LIABILITIES		CURRENT ASSETS & LOANS AND ADVANCES	
Salary Recovery	37,579.00	Interest Accrued but not Due	1107006.00
Payable to RCC	236160.00	Term Deposit with S.B.I	9623689.00
		Term Deposit with Fed.Bank	2420793.00
		Cash in Hand	34674.00
		Cash at Bank	4277599.54
		Imprest	6000.00
		Rent Deposits	38000.00
<b>TOTAL</b>	<b>28418311.38</b>	<b>TOTAL</b>	<b>26418311.38</b>

Vide my report of even date attached.

Finance Manager (Projects)

Director

T. AJITH KUMAR B.Com, FCA  
 CHARTERED ACCOUNTANT  
 MEM. NO. 20934B

Trivandrum,  
 19<sup>th</sup> December, 2008.

THE REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM (Reg. No. 567/81)  
 Foreign contribution for Research Projects  
 Receipts and Payments Account for the year ended 31-03-2008

RECEIPTS	Amount (Rs)	PAYMENTS	Amount (Rs)
To Opening balance	11191306.07	By Salary & Allowances	5360080.40
Foreign Contribution received during the year	11086249.89	Consumables	445541.00
Interest Received	247913.00	Electricity Charges	35463.00
		Travelling expenses	597487.00
		Miscellaneous	303380.00
		Repairs	35074.00
		Postage & Communications	102948.00
		Vehicle Maintenance	91938.00
		Slides & Photographs	4280.00
		Stationary	241323.00
		Internet connection charge	5337.00
		Medicines	711545.00
		Building maintenance	51961.00
		Electrical maintenance	5490.00
		Building rent	124665.00
		Overheads Charged	348508.00
		Computer Expenses	31493.00
		Maintenance others	29314.00
		Conference & Seminars	31588.00
		Vehicles	659461.00
		Air Conditioner	67600.00
		Equipment	30830.00
		Printer	6850.00
		Furniture	80910.00
		Photo Copier	46705.00
		Fan	4798.00
		UPS	2100.00
		Computer	135850.00
		Excess of Receipts over Payments.	12932979.66
<b>TOTAL</b>	<b>22525460.96</b>	<b>TOTAL</b>	<b>22525468.96</b>

Vide my report of even date attached.

Trivandrum  
 19<sup>th</sup> Dec. 2008.

Finance Manager  
 (Projects)

DIRECTOR

T. AJITH KUMAR  
 B.Com, FCA  
 CHARTERED ACCOUNTANT  
 MEM. NO. 20934B

AJITH KUMAR, B.Com, FCA  
CHARTERED ACCOUNTANT

T.C. 67/1012, Konathukulangara,  
Velliyorkavu P.O., Trivandrum - 686 013,  
Telephone : 0471 2495838  
Mobile : 9348990489  
E-mail: ajithku@vsnl.com

**AUDITOR'S REPORT**

I have audited the accounts of the Project Cell of the Regional Cancer Centre Society, registered as per T.C Literary Scientific and Charitable Societies Regulation Act XII of 1955 (Reg.No.567/8-1) with registered office at Medical College P.O., Thiruvananthapuram-695011, Kerala State for the year ending 31st March, 2008 and relevant books and vouchers and certify that according to the audited accounts.

1. Total Financial Assurances from funding agencies in India during the year ended 31st March, 2008 was Rs.3,40,32,475.74.
2. The unutilized Project Fund balance with the association at the end of the financial year 2007-2008 was Rs.2,21,91,869.58.
3. The information furnished above and in the Balance Sheet and statement of Income and Expenditure Account are correct as checked by me.

Trivandrum,  
19<sup>th</sup> December, 2008.

T. AJITH KUMAR B.Com, FCA  
CHARTERED ACCOUNTANT  
MEM. NO. 209348

THE REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM (Reg. No. 567/81)  
PROJECT CELL (Financial Assistance received from National Agencies for Research Projects)  
Balance Sheet as at 31st March 2008

LIABILITIES	AMOUNT (Rs)	AMOUNT (Rs)	ASSETS	AMOUNT (Rs)	AMOUNT (Rs)
Capital Fund :-					
Income and Expenditure A/c.			Fixed Assets:- Sch-2		178578.16
As per Last B/S	5705139.16		Foreign Contribution		
Add: Excess of Income over	4135970.14	9641109.30	Receivable Account		111987.00
Expenditure for the year			TERM DEPOSITS :		
Training Fund(Schedule-5)		3629979.90	SBT	12949117	
Current Liabilities			Punjab Nat. Bank	1500000	14449117.00
Security Deposits	58875.00		Cash in Hand - Sch-3		2760.00
Project Balances as per Sch-1	22191669.58	22250744.58	Cash at Bank - Sch-4		18978394.62
Salary Recovery		9035.00	Income tax Recovery		3705.00
Payable to RCC		546393.00	Overheads Receivable		587366.00
Other Liabilities			Interest Accrued but not Due		1139234.00
NBRR Project (sale of vehicle)		85600.00	TDS		911420.00
<b>TOTAL</b>		<b>36362961.78</b>	<b>TOTAL</b>		<b>36362961.78</b>

Vide my report of even date attached.

Trivandrum  
19<sup>th</sup> December, 2008.

Finance Manager(Projects)

DIRECTOR

T. AJITH KUMAR B.Com, FCA  
CHARTERED ACCOUNTANT  
MEM. NO. 209348

**PROJECT CELL**  
**THE REGIONAL CANCER CENTRE SOCIETY**  
**Income and Expenditure Account for the year ended 31st March 2008**

Expenditure	Amount (Rs.Ps.)	Income	Amount (Rs.Ps.)
Salary Paid	222,28.30	Income from Projects	3,29,8374.18
Travelling Expenses	40309.00	Interests received	12,10,075.00
Audit Fee	53530.00		
Printing & Stationery	21158.00		
Computer Stationery	1145.00		
Postage & Telephone Expenses	1177.00		
Other Miscellaneous Expenses	7648.00		
Depreciation	25113.74		
Excess of Income Over Expenditure	4,13,5970.14		
<b>TOTAL</b>	<b>45,38,149.18</b>	<b>TOTAL</b>	<b>45,08,149.18</b>

Trivandrum,  
19<sup>th</sup> December 2008

**Finance Manager(Projects)**

**DIRECTOR**

**T.AJITH KUMAR B.Com, FCA**  
**CHARTERED ACCOUNTANT**  
**MEM.NO-209348**

## ACKNOWLEDGEMENTS

Ministry of Health & Family Welfare, Government of India  
 Ministry of Information Technology, Government of India  
 Department of Science and Technology, Government of India  
 Department of Health & Family Welfare, Government of Kerala  
 Indian Council of Medical Research, New Delhi  
 World Health Organisation, Geneva, Switzerland  
 World Health Organisation, Regional Office, New Delhi  
 International Union Against Cancer (UICC) Geneva, Switzerland  
 National Cancer Institute, Bethesda, Maryland, USA  
 International Agency for Research on Cancer, Lyon, France  
 Bhabha Atomic Research Centre, Mumbai  
 Director General of Health Services, Government of India, New Delhi  
 Medical College, Thiruvananthapuram  
 Sree Avittam Thirunal Hospital for Women and Children  
 Dental College, Thiruvananthapuram  
 Sree Chitra Thirunal Institute for Medical Sciences & Technology  
 Kerala State Committee on Science, Technology and Environment  
 Director of Health Services, Government of Kerala  
 Atomic Energy Commission, Government of India  
 Department of Economics and Statistics, Government of Kerala  
 University of Kerala, Thiruvananthapuram  
 Mahatma Gandhi University, Kottayam  
 Drugs Controller, Thiruvananthapuram  
 College of Pharmaceutical Sciences, Thiruvananthapuram  
 C-DAC, Thiruvananthapuram  
 Centre for Earth Science Studies, Thiruvananthapuram  
 Indian Space Research Organisation  
 Finnish Cancer Society, Finland  
 University Grants Commission  
 Corporation of Thiruvananthapuram  
 Health Research Foundation, Japan  
 Kairali TV, Thiruvananthapuram  
 Care Plus, Thiruvananthapuram  
 Asraya, Thiruvananthapuram  
 Prathyasa, Thiruvananthapuram  
 Regional Cancer Association, Thiruvananthapuram  
 SDM Cancer Relief Fund, California  
 All our Wellwishers and Friends