

**REGIONAL  
CANCER  
CENTRE**

**THIRUVANANTHAPURAM**

**2003-2004**

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



**REPORT OF ACTIVITIES 2003-2004**

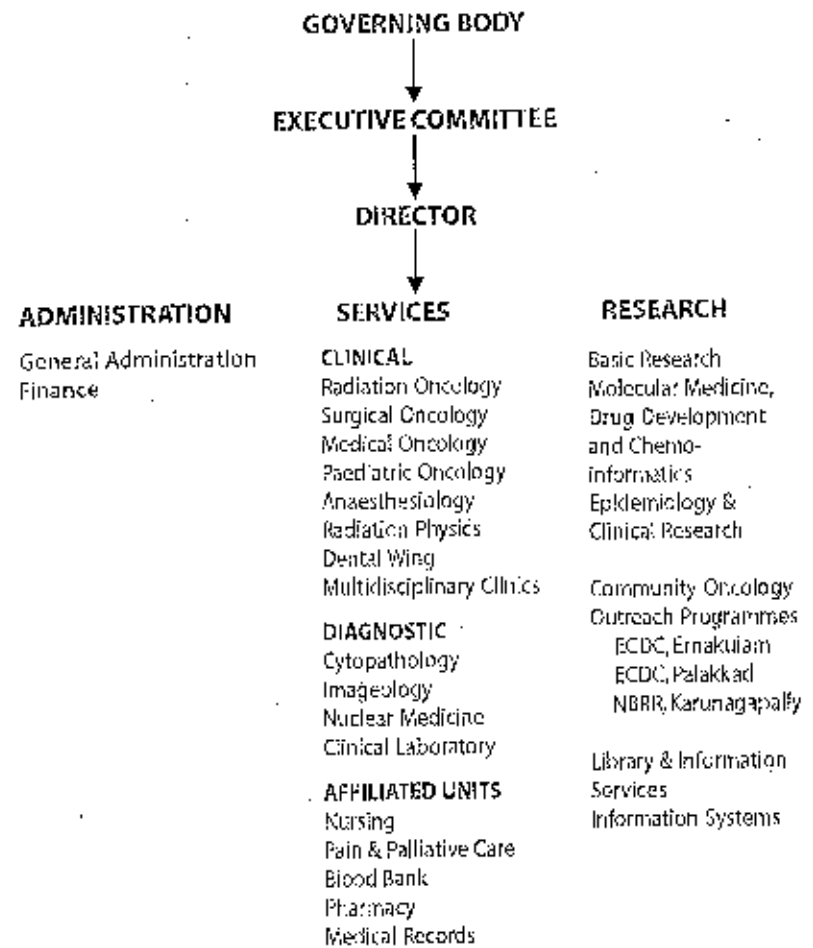
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### GOVERNING BODY MEMBERS OF REGIONAL CANCER CENTRE

- |     |  |                    |
|-----|--|--------------------|
| 1.  | Sri.A.K.Antony,<br>Hon'ble Chief Minister of Kerala  | Chairman           |
| 2.  | Adv.Sri.P.Sankaran,<br>Hon'ble Minister for Health,<br>Govt. of Kerala (till 10.2.2004)        | Vice-Chairman      |
| 3.  | Sri.Kadavoor Sivadasan<br>Hon'ble Minister for Health,<br>Govt. of Kerala (from 11.2.2004)     | Vice-Chairman      |
| 4.  | Sri.K.Ramamoorthy, IAS<br>Principal Secretary to Govt. of Kerala,<br>Health and Family Welfare | Alt. Vice-Chairman |
| 5.  | Smt.Sudha Pillai, IAS<br>Principal Secretary to Govt. of Kerala,<br>Finance Department         | Member             |
| 6.  | Sri.S.M.Vijayanand, IAS<br>Secretary to Govt. of Kerala,<br>Planning Department.               | -do-               |
| 7.  | Dr.S.P.Agarwal, Director<br>General of Health Services, Govt. of India                         | -do-               |
| 8.  | Sri.L.P.Naik, Secretary,<br>Health & Family Welfare, Govt. of India                            | -do-               |
| 9.  | Dr.M.S.Valliathan, Hony. Advisor,<br>Manipal Academy of Higher Education                       | -do-               |
| 10. | Dr.K.Mohandas,<br>Director, SCTIMST, Trivandrum  | -do-               |
| 11. | Dr S.C.Gupta,<br>Former Director, VSSC, Trivandrum   | -do-               |
| 12. | Dr.M.R.Chandran<br>Director of Medical Education, Trivandrum                                   | -do-               |
| 13. | Dr.M.N.Rema<br>Principal, Medical College, Trivandrum  | -do-               |
| 14. | Dr.M.Krishnan Nair<br>Director, RCC, Trivandrum (till 30.11.2003)                              | Convener           |
| 15. | Dr.B.Rajan<br>Director, RCC, Trivandrum (from 1.12.2003)                                       | Convener           |

### EXECUTIVE COMMITTEE MEMBERS OF THE REGIONAL CANCER CENTRE

- |    |  |          |
|----|--|----------|
| 1. | Sri.K.Ramamoorthy, IAS<br>Principal Secretary to Govt. of Kerala,<br>Health and Family Welfare | Chairman |
| 2. | Smt.Sudha Pillai, IAS<br>Principal Secretary to Govt. of Kerala,<br>Finance Department         | Member   |
| 3. | Sri.S.M.Vijayanand, IAS<br>Secretary to Govt. of Kerala,<br>Planning Department                | -do-     |
| 4. | Dr.M.R.Chandran<br>Director of Medical Education, Trivandrum                                   | -do-     |
| 5. | Dr.M.N.Rema<br>Principal, Medical College, Trivandrum  | -do-     |
| 6. | Dr.M.Krishnan Nair<br>Director, RCC, Trivandrum (till 30.11.2003)                              | Convener |
| 7. | Dr.B.Rajan<br>Director, RCC, Trivandrum (from 1.12.2003)                                       | Convener |

## OVERVIEW

Regional Cancer Centre, Trivandrum, one of the leading RCCs in India continue to keep high standards in patient management, research and development activities as well as human resource development. There has been rapid progress in community outreach programmes too. The Centre conducts Cancer Control programmes covering the entire state by way of cancer awareness classes, screening camps and other public and professional education programmes. The Centre not only caters to the patients from neighbouring states but also from neighbouring countries. The year witnessed the superannuation of founder Director, Professor M. Krishnan Nair whose crusade against cancer benefited the state of Kerala as well as the country at large. RCC acknowledge his contributions to the cause of cancer with the deepest sense of gratitude and reverence.

The most striking event during the period under report was the commissioning of Dual Photon High Energy Linear Accelerator. Another remarkable event has been the telecast of a tele documentary series on cancer awareness named 'Swasthi' through Doordarshan Malayalam channel from 7.11.2003 to 19.03.2004. This WHO funded programme was well received by the general public. As regards the academic activities, the year recorded significant achievements which include workshops both international and regional, training programmes, and various other activities. A novel programme on Holistic Cancer nursing, inaugurated by Her Highness Maharani Gowri Parvathi Bai of Kowdiar palace was the first of its kind. The senior nurses working in various hospitals in Kerala were the beneficiaries of another ten day programme, organized in co-operation with Union Health Ministry. The workshop organised in connection with the 'World No Tobacco Day' in the Centre discussed the theme, "Tobacco Free

Films and Fashion". The two day International workshop on 'Post-laryngectomy voice rehabilitation and Surgical management of cancer of larynx and hypopharynx' was blessed with the technical expertise provided by Dr. Frans Hilgers of the Netherlands Cancer Institute, one of the pioneers in post-laryngectomy voice rehabilitation.

Regional Cancer Centre, in association with the International Agency for Research on Cancer (IARC), France conducted a twelve-day International Course on Cancer Epidemiology. This international event was followed by another one titled 'the Regional Conference of the members of the Commission for Education and Communication (CEC) of the International Union for Conservation of Nature (IUCN) and Biodiversity Seminar'.

The formal inauguration of the much awaited High Energy Linear Accelerator by the Hon'ble Union Minister for Health, Mrs. Sushma Swaraj was another milestone in our efforts to provide quality patient care. As part of the rehabilitation activities, artificial limb camp was organized jointly by RCC, Careplus and the Inner Wheel Club, Thiruvananthapuram with support from Rotary Artificial Limb Centre on Wheels, the Rotary, Middle Town, Coimbatore and the Rotary, Lewisville, USA.

A number of dignitaries visited from India and abroad in connection with their participation in national and international events. Popular artists from the world of entertainment like Dr. K.J. Jesudas, play back singer and Shri. Mohanlal, popular cine artist visited RCC and comforted the patients. The Minister of State for Human Resource Development Dr. Vallabh Bai Kathiria visited RCC in August 2003.

There has been notable improvements observed in patient services also. Our site wise multidisciplinary clinics functioning from Monday to Saturday, as detailed below, provide high quality patient care.

## MULTISPECIALITY CLINICS OFFERED BY THE CENTRE

Clinics	Specialties	Services
A. Hemato-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).
C. Breast & Central Nervous System	Radiation Oncology Medical Oncology Surgical Oncology	Breast conservation Breast Reconstruction
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.
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, radiiodine therapy, radio nuclide therapy.

LOOKING AHEAD .....

Regional Cancer Centre is now aware of the increasing competition arising out of oncology facilities in the private sector. In this context RCC plans to widen its infrastructure with the addition of modern and high tech machines particularly in the field of diagnosis and radiation therapy. RCC plans to acquire a new Spiral Sub Second C.T.Scanner, new Dual Head Gamma Camera, Radiation field Analyzer etc in the coming years. A new thrust is being given to community outreach programmes and implementation of the National Cancer Control Programmes. A lot of importance is being given to environmental carcinogens and toxic chemicals like insecticides and its impact on human systems. Biodiversity is another area, which RCC is identifying for studying the potential of some of the medicinal plants whose antineoplastic properties are yet to be identified, isolated and purified. RCC also plans to expand its research programmes in areas such as oral cancer biology, familial cancer research and establishment of familial cancer registry and molecular studies in the areas of High Natural Background Radiation near Kollam as well as expanding the molecular research facility.

We are hopeful that in times to come, RCC would further re-consolidate its academic and clinical strength to impart a better health care system outcome to the people of Kerala.

This report contains activities of various divisions and peripheral units of RCC for the year 2003-04.

*B. Raju*  
DIRECTOR

**Professor M. Krishnan Nair, MD FRCR**  
**Founder Director**



One of the most significant yet disappointing events during the reporting period is, perhaps, the retirement of Prof. M. Krishnan Nair, MD,FRCR., founder Director, whose vision, untiring efforts and selfless devoted work resulted in this great institution. From what was once 'one of the departments' in a secluded part of Medical College,Trivandrum where cancer patients were admitted in poor ambience, this relentless crusader against cancer with a sheer grit and determination overcame every conceivable hurdle, to create what is today the edifice of the Regional Cancer Centre which stand tall and elegant nestled within luscious greenery and an important landmark on the medical landscape of the country.

More than an institution, RCC is today a programme and an epitome of excellence and beneficence. With the cleanest premises, state-of-the-art treatment modalities, competent staff and infrastructure, it has become the trusted destination for cancer care, prevention and research. It not only caters to patients from neighbouring Indian States but also from neighbouring countries. As founder Director, the legacy he has left behind continues to inspire colleagues and well-wishers elsewhere. Among the recognitions and awards galore including the Padmashri which is seeking after him, perhaps the eternal and transcendent ones are those smiles and words of gratitude from countless patients and their families. His undaunting zeal for excellence has been etched within the structure of RCC and hence institution can only surge ahead to loftier heights.

Thank you, sir.

Staff of Regional Cancer Centre





Shri. T.K.A. Nair (Chairman, Public Enterprises Selection Commission, Govt. of India & Former Secretary, MoEF, Govt. of India) delivering the keynote address in connection with Regional Conference of IUCN members of the Commission for Education and Communication, Trivandrum, 30-31 October 2003.



Visit of Dr. K.J. Jesudas, as part of the programme, "Santhwana Sandhya" (30<sup>th</sup> July 2003)



Switch-on ceremony of 'Swasthi' documentary series on Cancer awareness.

## DEPARTMENTAL ACTIVITIES RADIATION ONCOLOGY

Dr. M. Krishnan Nair	Professor (till 30/11/2003)
Dr. B. Rajan	Professor
Dr. P.G. Jayaprakash	Additional Professor
Dr. Sureshchandra Dutt	Additional Professor
Dr. S. Parameswaran	Additional Professor
Dr. Jayaprakash Madhavan	Additional Professor
Dr. K. Ramadas	Additional Professor
Dr. K. Ratheesan	Associate Professor
Dr. Thomas Koilparambil	Associate Professor
Dr. Francis V. James	Associate Professor
Dr. Beela Sarah Mathew	Assistant Professor
Dr. Aswin Kumar	Assistant Professor
Dr. C.D. Sivanandan	Assistant Professor
Dr. Rejnish Kumar	Assistant Professor

The most welcome event for the division of Radiotherapy has been the commissioning of the Dual Photon High Energy Linear Accelerator in the month of September 2003. Closely following this was the decision to purchase the IMRT Planning System for which orders have already been placed in January 2004. This is indeed a technological breakthrough for the Centre to provide high tech radiation treatment to patients for the first time in the State of Kerala.

### Teaching/Training Programmes

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



### Ongoing Research Projects

1. Adjuvant tamoxifen in breast cancer- Longer against shorter  
(Funded by: ATLAS- Clinical trial Services Unit, Oxford, U.K.)  
Principal Investigator : Dr. B. Rajan
2. Estrogen receptor gene polymorphism in breast cancer and response to tamoxifen treatment (Funded by : Science & Technology Department, Govt. of Kerala.)  
Principal Investigator : Dr.B.Rajan
3. Case-control study of breast cancer in South Asia comparing rural and urban woman. (Funded by. International Agency for Research on Cancer, Lyon, France)  
Co-Principal Investigator : Dr.B.Rajan
4. Trivandrum oral cancer screening study (TOCS) (Funded by: International Agency for Research on Cancer, Lyon, France)  
Principal Investigator : Dr.K.Ramadas
5. Genotyping of the CYP1A and GSTM1 gene in tobacco associated oral cancer. (Funded by: Indian Council of Medical Research, New Delhi)  
Principal Investigator : Dr.K.Ramadas
6. Multicentre study of cremophor-free, protein stabilized, nano-particle formulation of paclitaxel (ABJ-007) in patients with stage IV metastatic breast cancer. (Funded by: Quintiles India Ltd.)  
Principal Investigator : Dr.K. Ratheesan
7. Tobacco related mortality study (Funded by: International Agency for Research on Cancer, Lyon, France)  
Principal Investigator : Dr.K.Ramadas
8. Molecular epidemiology of cancer of the oral cavity and oropharynx: a multicentre case-control study  
Principal Investigator : Dr.K.Ramadas

Comparative evaluation of visual inspection after application of acetic acid and lugol's iodine to test clinical cancer prevention  
(Funded by: International Agency for Research on Cancer, Lyon, France)

Co-investigator : Dr.K.Ramadas

9. Quality of life assessment in oral cancer patients (Funded by: University Grants Commission of India)

Co-investigator : Dr.K.Ramadas

10. Role of anterior chemotherapy in operable stage III and IV carcinoma of tongue- a randomized control trial.

Principal Investigator : Dr.K.Ramadas

11. Gemcite & Cisplatin in patients with locally advanced/ metastatic urinary bladder cancer: An observational research programme. No.B9E-IN-S310(a) (Funded by: Eli Lilly and Co.)

12. Phase III randomized comparison of concurrent Gemcitabine, Cisplatin, and Radiation followed by adjuvant Gemcitabine and Cisplatin versus concurrent Cisplatin and Radiation in Cancer of the Cervix stages II B to IV A. (Funded by: Eli Lilly and Co)

13. Development of an in vitro cellular model to predict tumour response to radiotherapy in Carcinoma cervix. (Funded by: Kerala State Committee for Science, Technology & Environment)

14. Phase III trial of docetaxel and pivanex vs docetaxel as second line chemotherapy for advanced non-small cell lung cancer.

Principal Investigator : Dr. Jayaprakash Madhavan

15. Phase III trial of gemcitabine and tyrosine kinase inhibitor vs gemcitabine in advanced Ca pancreas. (Funded by: Titan Pharmaceuticals)

Principal Investigator : Dr. Jayaprakash Madhavan

16. Randomized trial of early vs late phase chest irradiation in small cell lung cancer

Principal Investigator : Dr. Jayaprakash Madhavan

18. Malignancy detection using Laser induced fluorescence emission. Joint project by Centre for Earth Science Studies, Trivandrum and RCC, Trivandrum. (Funded by: Dept. of Science & Technology, Govt. of India)

19. Radiosensitivity of pelvic tumours (Funded by: Dept. of Science & Technology, Govt. of Kerala)

Principal Investigator: Dr. Jayaprakash Madhavan

20. Comparison of efficacy and toxicity of anthracycline based chemotherapy - CAF/CEF vs AC followed by Paclitaxel in the adjuvant treatment of patients with node positive breast cancer: a prospective randomised study.

Principal Investigator: Dr. B. Rajan

Co-Investigators: Dr. S. Parameswaran,  
Dr. K. Ratheesan,  
Dr. Beela Sarah Mathew

21. Cyclo-oxygenase 2 inhibition for enhancement of survival in high grade astrocytoma: a pilot phase II study.

Principal Investigator: Dr. Beela Sarah Mathew

Co-Investigator: Dr. B. Rajan

22. National Environmental health profile and comparative health risk assessment. (Funded by: World Health Organisation & Ministry of Environment and Forests)

Principal Investigator: Dr. M. Krishnan Nair

#### Conferences / Workshops attended / Papers presented / Training programmes

##### Dr. B. Rajan

1. 4<sup>th</sup> European breast cancer conference. Hamburg, Germany, 16-20 March 2004
2. Meeting on Rare cancers. National Cancer Institute, USA, September 2003.

3. 25<sup>th</sup> Annual national conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003.

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

1. Association of Radiation Oncologists of India, State chapter meeting, Kochi, September 2003.
2. 25<sup>th</sup> Annual national conference of the Association of Radiation Oncologists of India, State chapter meeting, Kochi, 20-23 November 2003.
3. NCRP meet on "Patterns of care and survival studies in cervical cancer in India". Bangalore, 21-22 January 2004.
4. 'Cancer related anemia: an update'. Radiation Oncologists of South India meet, Hyderabad, 1 February 2004.

##### Dr. Jayaprakash Madhavan

1. 25<sup>th</sup> Annual National conference of Association of Radiation Oncologists of India, Kochi, 20-23 November 2003. Talk on "Capecitabine and concurrent radiation in rectal cancer".
2. International conference of lung cancer, Bangkok, 2004.
3. National Comprehensive Cancer Network (India) conference, Jaipur, 12-13 April 2003.
4. International workshop on Oesophagus cancer, Lakeshore Hospital & Research Centre, Kochi, 12-14 March 2004.

##### Dr. K. Ramadas

1. Editorial and consensus conference of WHO classification of head and neck tumours. Lyon, France, 16-19 July 2003.
2. IARC International course on cancer epidemiology: Principles & Methods. Trivandrum, 1-12 September 2003.
3. 3<sup>rd</sup> International congress on oral cancer, Melbourne, Australia, 16-19 November 2003. Paper: 'Interim results from a cluster randomized controlled oral cancer screening trial in Kerala, India'.

4. 25<sup>th</sup> Annual national conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003.

**Dr. K. Ratheesan**

1. International conference on 'Cancer Biology for the Clinicians', Luxemburg, 14-15 November 2003.
2. 25<sup>th</sup> Annual national conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003

**Dr. Francis V. James, Dr. Thomas Koilparampil & Dr. Aswin Kumar**

- 25<sup>th</sup> Annual national conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003

**Dr. Beela Sarah Mathew**

1. 25<sup>th</sup> Annual national conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003
2. WHO workshop on Patterns of care and survival in cancer breast, Bangalore, 23-24 January 2004.
3. Neuro-oncology group of India, Launch meeting, Hyderabad, January 2004.

**Dr. Aswin Kumar**

Training in Theratron Elite 100 therapy machine, Canada, 22-26 September 2003.



Commissioning of the Precise High Energy Linear Accelerator, by the Honourable Minister for Health & Family Welfare, Smt. Sushma Swaraj, (28<sup>th</sup> September 2003)



His Excellency Governor of Kerala, Shri. Sikander Bakht inaugurating IARC International Course on Cancer Epidemiology: Principles & Methods, 1-12 September 2003



## SURGICAL ONCOLOGY

Dr. Paul Sebastian	Additional Professor
Dr. K. Chitrathara	Associate Professor (on leave from 16 / 5/ 2003)
Dr. Jem Prabhakar	Associate Professor
Dr. Cherian Koshy	Associate Professor (till 16/ 5/ 2003)
Dr. Namrata Dhakkad	Associate Professor
Dr. Manoj Pandey	Associate Professor
Dr. Shaji Thomas	Assistant Professor
Dr. Bipin T. Varghese	Assistant Professor
Dr. Paul Augustine	Assistant Professor
Dr. Firoz Rajan	Assistant Professor (till 31/ 5/ 2003)
Dr. K. Chandramohan	Assistant Professor (on leave from 5 / 11/ 2003)
Dr. Elizabeth M. Iype	Assistant Professor
Dr. Balagopal PG	Lecturer

### Clinical activities

During the reporting year, 2609 surgeries (Major: 2070 and Minor: 539) and 1713 endoscopic procedures were carried out.

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

Region	No (2070)	Percentage
Head and Neck	905	43.7
Breast	583	28.2
Thorax and Abdomen	258	12.5
Genito Urinary	227	11.0
Bone and extremity soft tissue sarcoma	65	3.1
Skin and other miscellaneous tumours	32	1.5

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

Site	No (905)	Percentage
Oral cavity and oropharynx	534	59.1
Larynx and hypopharynx	29	3.2
Metastatic Neck Nodes	94	10.4
Thyroid	157	17.3
Salivary gland	25	2.8
Others	66	7.2

**Table - 3: Breast Cancer ~ Operative Procedures**

Procedure	No.
Modified radical Mastectomy	412
BCT	122
Breast Reconstruction	8

**Table - 4: Endoscopic procedures**

Procedure	No (1713)
Nasopharyngoscopy	407
Bronchoscopy	213
Upper GI endoscopy	388
Colonoscopy	281
Oesophageal stricture dilatation	55
Oesophageal stenting	25
Rigid nasal endoscopy and DL scopy	145
Cystoscopy	199

**Academic activities**

- 1 Organized an International workshop on Post laryngectomy voice rehabilitation and CME on surgical management of larynx and hypopharynx cancers in August 2003.

- 2 Provided training in surgical oncology for postgraduate students in Surgery, ENT and Maxillofacial Surgery from various medical and dental colleges in Kerala, Tamil Nadu and Karnataka.

**Ongoing Research Projects**

1. Trivandrum Oral Cancer Screening Study (TOCS): Population based screening for oral malignant and premalignant lesions (*Funded by: IARC*)  
Co-investigators : Dr. Paul Sebastian, Dr. Manoj Pandey
2. Role of vitamin A prophylaxis in preventing malignant transformation of oral premalignant lesions (*Funded by: IARC*)  
Co-investigator : Dr. Manoj Pandey
3. Study into the role of vitamin A in preventing the second primary malignancy in treated oral cancer (*Funded by: IARC*)  
Co-investigator : Dr. Manoj Pandey
4. Genotyping of the CYP1A and GSTM1 genes in tobacco associated oral cancer (*Funded by: ICMR*)  
Co-investigator : Dr. Manoj Pandey
5. Metalloproteinases in oral cancer (*Funded by: ICMR*)  
Co-investigator : Dr. Manoj Pandey
6. Comparative evaluation of early detection of cervical cancer precursor by acetic acid and Schillers iodine in Kerala (*Funded by: IARC*).  
Co-investigators : Dr. Namrata Dhakad, Dr. Paul Sebastian, Dr. Chitrathara
7. Natural history of genital HPV infection (*Funded by: IARC*)  
Co-investigators : Dr. Namrata Dhakad, Dr. Paul Sebastian, Dr. Chitrathara
8. Cervical Cancer Control Project (*Funded by: IARC*)  
Co-investigators : Dr. Namrata Dhakad, Dr. Paul Sebastian, Dr. Chitrathara

9. Trivandrum quality of life study (TQOLS) in patients with head and neck cancer undergoing curative treatment (*Funded by: UGC New Delhi*).

Co-investigator : Dr. Manoj Pandey

10. Molecular analysis of surgical margins in head and neck cancer patients

Investigators : Dr. Paul Sebastian, Dr. Bpin T. Varghese and Dr. Balagopal

11. Versatility of PMMC flaps in head and neck cancer.

Investigators : Dr. Balagopal and Dr. Paul Sebastian

**Awards / Conferences / workshops attended/ Papers presented / Training programmes**

The division was awarded a sum of Rs. 50 lakhs under the **FIST Programme 2003** of the Department of Science and Technology, Government of India in order to improve the infrastructure for teaching and research in head and neck surgery. The major portion of this funding would be utilized to acquire a state-of-the-art operating microscope with teaching accessories and a precision pneumatic drill and saw system.

**Dr. Paul Sebastian**

1. Annual conference of Indian Society of Gastroenterology, Chennai, November 2003
2. ICMR-NCRP-WHO workshop on patterns of care and survival studies in head and neck cancer, Bangalore, January 2004.
3. IARC International course on cancer epidemiology: Principles and methods, Trivandrum, 1 - 12 September 2003.
4. 'Symposium on breast cancer'. The annual conference of Association of Surgeons of India, Kerala chapter (KASICON 2003), Kottayam, 9-10 May 2003.

5. Talk on 'Simple innovative technique for delivering s/c morphine for pain relief in cancer'. INCTR, Brussels, Belgium, May 2003.
6. 25<sup>th</sup> Annual national conference of Association of Radiation Oncologists of India, Kochi, 20-23 November 2003. Paper: 'Sentinel node biopsy'.
7. Organizing chairman -1<sup>st</sup> International workshop on Post laryngectomy voice rehabilitation. RCC, Trivandrum, 26 August 2003.

**Dr. Jem Prabhakar**

1. Evidence Based Management of Cancers in India - EBM 2004, Tata Memorial Hospital, Mumbai, 27-29 February 2004
2. 25<sup>th</sup> Annual national conference of Association of Radiation Oncologists of India, Kochi, 20-23 November 2003.
3. Annual conference on Indian Society of Gastroenterology, Chennai, November 2003.
4. Workshop on breast conservation and reconstructive surgery, Tata Memorial Hospital, Mumbai, 11 - 12 October 2003.
5. Training programme in therapeutic and interventional endoscopic procedures, Tata Memorial Hospital, Mumbai, 13 - 18 October 2003.
6. Advanced training programme on Proximate Staplers at Ethicon Institute of Surgical Education, Chennai, 2 August 2003.

**Dr. Manoj Pandey**

1. 'Quality of life of patients with cancer in India. Challenges and hurdles in putting theory into practice'. The annual congress of International Psycho-oncology Society, Banff, Canada, 23-27 April 2003.
2. The annual conference of Association of Surgeons of India, Kerala chapter (KASICON 2003), Kottayam, 9-10 May 2003.

3. International workshop on Post-laryngectomy and voice rehabilitation, Regional Cancer Centre, 26 August 2003. Paper: 'Role of viscera in laryngopharyngeal reconstruction'.
4. 'Radiotherapy in Soft tissue Sarcoma'. National Conference of Indian Association of Surgical Oncology (NATCON IASO 2003), Lucknow, 19-22 September 2003.
5. National conference of Indian Association of Endocrine Surgeons, Kottayam, 1-2 November 2003
6. 'Surgeon as prognostic factor in oncology'. Annual conference of Association of Surgeons of India (ASICON), Pune, 26-30 December 2003.
7. 'Soft tissue sarcoma'. CME in Surgical Oncology-1, Department of Surgical Oncology, IMS, BHU, Varanasi, 6-7 January 2004.

#### Dr. Shaji Thomas

1. The annual conference of Association of Surgeons of India, Kerala chapter (KASICON 2003), Kottayam, 9-10 May 2003.
2. 'Conventional flaps in laryngopharyngeal reconstructions', International workshop on Post-laryngectomy and voice rehabilitation, Regional Cancer Centre, 26 August 2003.

#### Dr. Bipin T. Varghese

1. Awarded UICC-ICRETT fellowship for training in Microvascular reconstructive surgery. Cannies Burn Hospital, Regional Plastic Surgery Unit, Glasgow, Edinburgh.
2. Organised 1<sup>st</sup> International workshop on Post-laryngectomy voice rehabilitation and CME on surgical management of larynx and hypopharynx cancers.
3. Conference of the Association of Otolaryngologists of India (AOI), South Zone and Kerala Chapter, Thrissur, 26-28 September 2003.



Inauguration of Laryngeal Club and 1<sup>st</sup> International Workshop on Post-laryngectomy voice rehabilitation by Hon. Minister for Industries, Shri. PK. Kunjalkutty. (25<sup>th</sup> August 2003)



4. Workshop on LASERS in head and neck oncology at GCHI, Ahmedabad, January 2004.

**Dr. Paul Augustine**

1. Workshop on breast conservation and reconstructive surgery, Tata Memorial Hospital, Mumbai, 11- 12 October 2003
2. Advanced training programme in thorapeutic and interventional endoscopic procedures, Tata Memorial Hospital, Mumbai, 13- 18 October 2003.
3. Advanced training programme on proximal staplers at Ethicon Institute of Surgical Education, Chennai, 2 August 2003.
4. Evidence Based Management of cancers in India - EBM 2004, Tata Memorial Hospital, Mumbai, 27-29 February 2004.

**Dr. Elizabeth Mathew Iype**

1. UICC-ICRETT fellowship obtained for 6 weeks training (April - May 2003) in "Voice conservation surgery and reconstructive procedures in the management of laryngeal and hypopharyngeal cancers". Memorial Sloan Kettering Cancer Center, New York under Dr. Jatin P. Shah.
2. 'Conservation surgery in carcinoma larynx'. International workshop on Post-laryngectomy voice rehabilitation, RCC, Trivandrum, 28 August 2003.
3. 'Perichondritis and chondroradionecrosis of larynx: Surgical management'. State annual conference of the AOI Kerala chapter, Thrissur, September 2003.

**Dr. Balagopal P.G.**

1. NCI Fellowship to Johns Hopkins University
2. South zone conference of NSI Kerala chapter, Trivandrum, July 2003.

## MEDICAL ONCOLOGY

Dr. Geetha N	Associate Professor
Dr. Sreejith Nair	Assistant Professor
Dr. Mirsa Hussain	Assistant Professor
Dr. NP Prakash	Assistant Professor
Dr. Lali VS	Resident Medical Officer

### Clinical activities

The division 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 on 6 days a week and about 3250 new cases were seen during the reporting year. Autologous bone marrow transplantation following High dose chemotherapy for multiple myeloma was performed in 3 patients.

### Academic activities

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. A continuing medical education programme in Medical Oncology was also conducted.

### Ongoing Research Projects

#### Dr. Geetha N.

1. A randomised open label international study of interferon alpha versus peginterferon in chronic myeloid leukaemia. (Co-investigator)
2. Multicenter study of Cremophor free protein stabilized nanoparticle formulation of paclitaxel in patients with stage IV metastatic breast cancer. (Co-investigator)
3. Chemotherapy response in osteosarcoma. Role of intrinsic nuclear factors in the prognosis of osteogenic sarcoma. (Principal investigator)

4. Protocol Number TTP-200-03-01. A randomized trial of Pivanex plus Docetaxel or Docetaxel monotherapy in patients with chemotherapy resistant advanced NSCLC.

#### Dr. Sreejith Nair

A multicentric trial to determine the efficacy and safety of recombinant human granulocyte colony stimulating factor in patients on myelosuppressive therapy for solid tumors and lymphomas.

#### Dr. B. Mirsa Hussain

Multi-national international trial on "The role of Pivanex + Docetaxel vs Docetaxel in recurrent, non-small cell lung cancer". (Co-investigator)

### Conferences attended / Nominations

#### Dr. Geetha N

1. International Conference on 'Cancer biology for clinicians', Luxemborg, 14-15 November 2003
2. Middle East Oncology meet, Dubai, January 2004
3. Editor, *Austral-Asian Journal of Cancer*
4. Member, American Society of Hematology & European Society of Medical Oncology

#### Dr. N.P. Prakash

35<sup>th</sup> Congress of the International Society of Pediatric Oncology, Cairo, Egypt, 8-11 October 2003

#### Dr. B. Mirsa Hussain

1. 45<sup>th</sup> Annual meeting of the American Society of Hematology, San Diego, California, USA, 6 - 9 December 2003.
2. 'CME on emerging therapeutic options in Chronic Myeloid Leukemia', Bombay, April 2003.
3. 25<sup>th</sup> Annual National conference of Association of Radiation Oncologists of India, Kochi, 20 - 23 November 2003.

## PAEDIATRIC ONCOLOGY

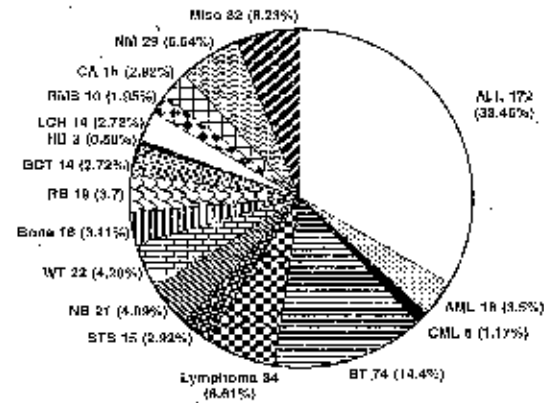
Dr. P. Kusuma Kurnary  
Dr. T. Priya Kumari  
Dr. Usha Suresh

Additional Professor & Head  
Assistant Professor  
Lecturer

### CLINICAL ACTIVITIES

**Table - 5: Distribution of Paediatric patients registered during 2003**

Paediatric Cases	No	Percentage
Acute Lymphoblastic Leukaemia	172	33.46
Acute Myeloid Leukaemia	18	3.50
CML	6	1.17
Brain Tumour	74	14.40
Lymphoma	34	6.61
Soft Tissue Sarcoma	15	2.92
Neuroblastoma	21	4.09
Wilm's Tumour	22	4.28
Bone Tumour	16	3.11
Retinoblastoma	19	3.70
Germ Cell Tumour	14	2.72
Hepatic Tumour	3	0.58
Histiocytosis	14	2.72
Rhabdomyosarcoma	10	1.95
Carcinoma	15	2.92
Non Malignant	29	5.64
Miscellaneous	32	6.23
Total number of new patients	514	100.00
Total number of out patient visits		11,400



The most common malignancy reported was Acute Lymphoblastic Leukaemia (33.46%).

Paediatric tumour boards with a multidisciplinary team consisting of Paediatric Oncologists, Radiation oncologists, Surgeons and Pathologists were conducted on every Monday at 2 pm.

### Conferences attended/ Papers presented

#### Dr. P. Kusumakumari

1. ICON CCI meeting in Hyderabad, 23 - 24 August 2003.
2. Invited talk: "Wilms' tumor" & "Ewing's sarcoma". In: Manipal Onco 2003 - Recent advances in the management of solid tumours in adult and paediatric oncology. KMC Manipal, 7 - 9 November 2003.
3. 'Evolution of present day treatment of Wilms' tumor and RCC experience'. 25th Annual National conference of Association of Radiation Oncologists of India, Kochi, 20-23 November 2003.
4. Guest lecture, "Approach to diagnosis of paediatric cancer", KMC, Attawar, 6 November 2003.

### Academic activities

Teaching and training of post graduates in Pediatrics and Radiotherapy, undergraduate medical students, M.Sc. & B. Sc. nursing students and nursing assistants.

## CYTOPATHOLOGY

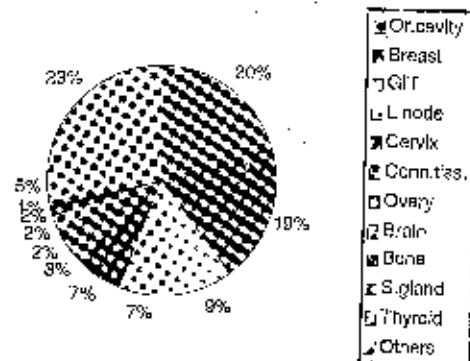
Dr. Elizabeth K. Abraham	Professor & Head
Dr. Jayasree K	Associate Professor
Dr. Rekha A. Nair	Associate Professor
Dr. Anitha Mathews	Associate Professor
Dr. Thara Somanathan	Assistant Professor
Dr. Lekshmi Narayanan	Assistant Professor (till 31-01-04)
Dr. Nileena Nayak	Assistant Professor
Dr. T.R. Preethi	Lecturer (On leave)
Dr. K. Raveendran Pillai	Assistant Professor
Dr. S. Lakshmi	Lecturer (On leave)

### I. Diagnostic Services

#### a. Surgical pathology

- i. *Histopathology*: Out of 9040 cases, 5856 were surgical specimens of the Centro and 3184 were review cases referred from other hospitals. Malignancy was reported in 5624 cases. (Fig 1).

**Fig 1. Malignant tumors of major sites, n = 5624**

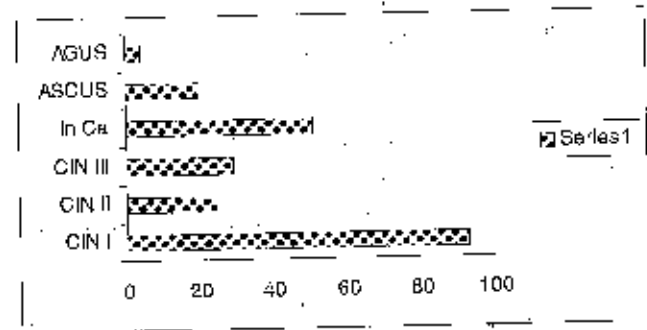


*Immunohistochemical (IHC) staining*: The total of 4492 IHC tests performed during the reporting year include assessment status tests for estrogen receptor (1086) and progesterone receptor of breast cancer (745). Immunohistochemical assay of Her2neu has also been performed in 358 cases of breast cancer samples.

### b. Cytopathology

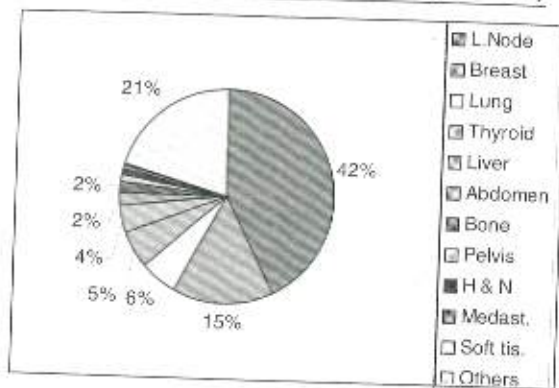
- i. *Gynaec Cytology*: A total of 7760 cervical smears were examined in the reporting year, which include 7420 cases from different projects. Cervical intraepithelial neoplasia (147) and invasive carcinomas (51) were reported. (Fig.2). Second opinion on cervical smears was given to the peripheral centers.

**Fig 2. Epithelial abnormalities in cervical smear, (n=224)**



- ii. *Fine Needle Aspiration Cytology*: From a total of 7760 specimens, 1907 malignancies were diagnosed. The major sites of aspiration were lymph node (1552), thyroid (1198) and breast (1017). Fig 3.

**Fig 3. Malignant tumors-FNAC (n=1907)**



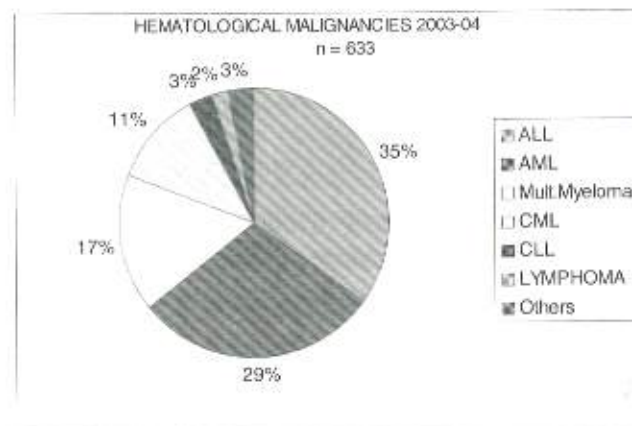
iii. *Fluid Cytology*: A total of 1236 samples were processed, which includes Cerebro Spinal Fluid (753), ascitic fluid (243), pleural fluid (189), urine (47) and pericardial fluids (4). Among these, malignancy was reported in 165 samples .

iv. *Sputum Cytology*: Sputum cytology was performed for 608 patients. Malignancies were reported in 52 cases and 66 cases were found to have atypical cells suspicious of malignancy.

### c. Haematopathology

Samples studied include 2395 bone marrow specimens, 1263 peripheral smears and 164 slide reviews. There were 633 malignancies and acute leukemia was the predominant one (407). (Fig. 4) Special stains done for typing leukemia include Peroxidase, PAS, Non specific esterase and Chloroacetate esterase. Immunocytochemical staining was done to diagnose ALL & cases of peroxidase negative AML using CD7, CD19, CD33, CD13, CD3, CD20 and LCA.

**Fig 4. Haematological malignancies (n=633)**



### Teaching and Training programmes

Regular one year post doctoral certificate course in Oncopathology and one year Cytotechnologists training were conducted in addition to the training provided for Cytotechnicians and Histotechnicians. Short term theory and practical teaching have been provided to B.Sc MLT students of MG University. One month posting were given to MD pathology students of Kottayam, Calicut and Trivandrum Medical Colleges.

### Other academic activities

Slide seminars and journal presentation on alternate Saturdays, tumor board meetings and neuropathology CPC discussions at SCTIMST. Ph D has been awarded to Mr. K Sujathan.

### Ongoing Clinical Trials & Research Projects.

1. Trivandrum Oral Cancer Screening project.

Co-investigators : Dr. Elizabeth Abraham &  
Dr. Thara Somanathan



2. Adjuvant Tamoxifen in breast cancer – Long against shorter  
Co-investigator : Dr. Elizabeth Abraham
3. Multicentric project on evaluation and validation of molecular markers in oral cancer.  
Co-investigator : Dr. Elizabeth Abraham
4. Identification of markers for biological grading of malignant lesions in the bronchopulmonary mucosa.  
Co-Investigator : Dr. Elizabeth Abraham
5. Molecular alterations in nasopharyngeal cancer with reference to oncogenes and tumour suppressor genes  
Co-investigatior : Dr. K. Jayasree.
6. Cell surface changes in leukemic cells. Study using plant lectins.  
Co-investigator : Dr. Rekha A. Nair
7. Indigeneous plant lectins and their use in immunology and pathology.  
Co-investigator : Dr. Rekha A. Nair
8. Comparative evaluation of early detection of cervical cancer precursors by VIA, VILI, HPV testing and colposcopy.  
Co-investigator : Dr. Thara Somanathan
9. Identification of markers for biological grading of malignant lesions in the bronchopulmonary mucosa.  
Principal Investigator : Dr. K. Raveendran Pillai
10. Thiruvananthapuram Corporation Cervical Cancer Control Programme  
Co-investigator : Dr. K. Raveendran Pillai & Dr. K. Sujathan

**Conferences attended / Papers presented /  
Training programmes / Awards / Fellowships**

**Dr. Elizabeth K. Abraham**

1. Talk on 'Current trends in management of ovarian and endometrial cancer' by Dr.Sharnila Makhija M.D., Alabama University, Birmingham, March 2004.
2. Talk on 'Follicular variant of papillary carcinoma thyroid – cytological predictors in diagnosis'. Annual conference of Indian Academy of Cytologists, Pune, November 2003.
3. Talk on ' Pathology of breast cancer'. 25<sup>th</sup> Annual national conference of Association of Radiation Oncologists of India, Kochi, 20-23 November 2003.
4. CME on urinary and CNS cytology at AFMC, Pune, November, 2003.
5. Talk on 'Cytopathological aspects & staging of differentiated thyroid cancers'. National consensus conference on the management of differentiated thyroid cancers at Amrita Institute of Medical Sciences, Kochi, April 2003.
6. IARC International course on cancer epidemiology: Principles and methods. Trivandrum, 1- 12 September 2003

**Dr. K. Jayasree**

1. IAPM Kerala chapter at Calicut, August 2003.
2. 'Expression of angiogenesis factor VEGF as prognosticator in primary nasopharyngeal cancer'. 23<sup>rd</sup> Annual convention of the Indian Association for Cancer Research, Mumbai, 29-31 January 2004.'
3. 'Gonadoblastoma overgrown by dysgerminoma: A case report'. APCON 2003: 52<sup>nd</sup> Annual conference of IAPM, Bhubaneswar, December 2003.

**Dr. Rekha A. Naik**

Awarded UICC (ICRETT) Fellowship to study PCR based molecular techniques in Leukemias and Lymphomas. July-August 2003.

**Dr. Anitha Mathews**

1. 'Glioblastoma with extraneural metastasis'. 52<sup>nd</sup> Annual conference of IAPM, Bhubaneswar, December 2003.
2. Two weeks training on PCR Techniques. University of Kagoshima, Japan, January 2004.

**Dr. Thara Somanathan**

1. 'Comparison of visual screening methods and cytology for the detection of cervical neoplasia precursors in Trivandrum, India'. A study conducted by the RCC, TVM and IARC. 5<sup>th</sup> International conference of European Research Organisation on Genital Infection and Neoplasia (EUROGIN 2003). Paris, April 2003.
2. 33<sup>rd</sup> Annual conference of Indian Academy of Cytologists, AFMC, Pune, November 2003.
3. Training course on pathology of the uterine cervix-cytology, histopathology & quality control, Lyon, France, April 2003.
4. Quality control programme in histopathology in Apollo Hospital, Hyderabad, March 2004.
5. Jan Walboomer award for the best research work in the EUROGIN Congress in Paris, April 2003.
6. Best poster award for the poster on malignant melanoma diagnosed by ascitic fluid cytology. 33<sup>rd</sup> National conference of IAC, AFMC, Pune, November 2003.

**Dr. Nileena Nayak**

1. 'Two unusual cases of chondrosarcoma of head and neck'. First National CME organized by IAPM Kerala chapter, Kozhikode, August 2003

2. 'Mucormycosis of breast diagnosed by FNAC'. 33<sup>rd</sup> National Conference of Indian Academy of Cytologists at AFMC, Pune, November 2003.

**Dr. K. Haveendran Pillai**

23<sup>rd</sup> Annual convention of the Indian Association of Cancer Research (IACR), Mumbai, 29-31 January 2004

**Dr. K. Sujathan**

1. 'Analysis of galactose specific lectin binding in reactive mesothelial cells, macrophages and adenocarcinoma cells: A diagnostic aid in effusion cytology'. 23<sup>rd</sup> Annual convention of the IACR, Mumbai, 29-31 January 2004
2. Hands on training in molecular oncology techniques. Cancer Institute, Adayar, Chennai, February 2004.
3. Received Ph D degree awarded by Annamalai University, Tamil Nadu.

## IMAGEOLOGY

Dr.K.Ramachandran	Professor & Head
Dr.A.S.Krishnakumar	Addl. Professor
Dr.M.Venugopal	Assistant Professor

**Table - 6:**

Diagnostic and interventional studies	Number
Plain X-ray	18140
<i>Special investigations using X-rays:</i>	
Barium Meal	14
Barium Swallow	211
Barium enema	7
Myelogram	1
Mammography	1858
CT Scan	4297
CT & guided procedures	299
Ultrasound	9853
Doppler studies	133
USS guided FNAC	181

### Academic Activities:

Training in various imaging modalities including mammography was provided to Radiologists from various parts of Kerala. Post graduates in Radiodiagnosis from various Medical Colleges, had short term postings in various imaging modalities. Five post graduate doctors had observer training in ultrasound for 6 weeks. Post graduate students from Dental College, Trivandrum and Karnataka (4) had posting in our department. In addition to the daily noon clinics, the division actively participated in the monthly meetings of Trivandrum Radiology Club, Pulmonary Radiology Club in SUT Hospital etc.

The Division continues to impart training to undergraduate medical students, CR students and diploma holders, Medical Laboratory Technology students etc. Interesting and rare films were added to the film library which was well utilized by the radiologists and students alike.

### Conferences / workshops attended / Papers presented

#### Dr. K. Ramachandran

1. 25<sup>th</sup> Annual National conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003. Paper: 'Mammography'.
2. Workshop on 'The role of Homeopathy in the treatment of cancer (Kerala)' sponsored by the Department of ISM &H, Ministry of Health and Family Welfare, Govt. of India and WHO, held at Govt. Homeopathic Medical College, Kozhikode, 17 -18 June 2003. Talk: "Diagnostic procedures in malignancy".

#### Dr. A. S. Krishnakumar

1. International workshop on doppler studies, Indian Institute of Science, Bangalore, 27-28 February 2004.
2. 25<sup>th</sup> Annual National Conference of the Association of Radiation Oncologists of India, Kochi, 20 - 23 November 2003.

#### Dr. A. Venugopal

1. Workshop on Doppler imaging and IRIA Conference, Thrissur, 29 - 30 November 2003
2. Talk on "Role of imageology in cancer screening" conducted for government doctors by DHS & RCC on 5<sup>th</sup>, 9<sup>th</sup> & 23<sup>rd</sup> March 2004.

## NUCLEAR MEDICINE

Dr. V.M. Pradeep  
Dr. A. Sreekumar

Additional Professor & Head  
Assistant Professor

The division provides diagnostic and therapeutic facilities using open radioactive sources. The Centre attracts a large group of patients who come from various districts of Kerala, South Tamil Nadu, Karnataka as well as from Male and Sri Lanka. The work includes in-vitro assays, various types of scans, treatment for Thyrotoxicosis and Thyroid Cancer as well as palliative treatment of bone pain. This is the only Centre in the state that provides high-dose therapy using radioactive sources. Recently 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 Nuclear Medicine division also participates in several teaching and other academic activities.

### Thyroid Clinic

Facilities for comprehensive diagnostic and therapeutic options for various thyroid disorders available include thyroid scanning, ultrasonography, in-vitro assays, and radioiodine therapy. 11,138 cases attended the thyroid clinic, which include now cases with direct referrals and follow-ups. These were primarily cases of Ca Thyroid and Thyrotoxicosis. The other cases were referred for various investigations such as thyroid function tests, thyroid uptake and scan.

### Breakup of thyroid investigations

Thyroid Scans + Uptake	4637
Thyroid Ultrasound	1827
Thyrotoxicosis	151
Ca Thyroid	411

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

### Immunoassay

The immunoassay section performed 18664 assays of thyroid hormones, tumor markers and miscellaneous assays including thyroid evaluation, tumor markers, and other assays.

### Imaging (Gamma Camera)

The division has a Siemens Gamma Camera, Basicam Model with a microdelta computer and is used for bone scan, static and dynamic scintigraphy. It is also used for dynamic renal studies including pediatric renal evaluation. Technetium for these scans is eluted from Molybdenum using Mo-Tc generator from BARC. Scanning is done using 99mTc(V)DMSA and 131-I-MIBG, for medullary Ca Thyroid.

### Radionuclide therapy

This section, one of the largest in the country, has recently been recognized by the Atomic Energy Regulatory Board as a training centre for high dose treatment with pen radioactive sources. The division has a full-fledged radionuclide therapy ward with delay tank for the treatment of thyroid cancer. The division has facilities for using Sr-89 and Samarium-153 in bone pain palliation.

### Conferences / CMEs attended / Papers presented

#### Dr. V. M. Pradeep

25th Annual National conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003

#### Dr. A. Sreekumar

1. Role of Tc-99m MDP skeletal scintigraphy in the evaluation of primary bone tumors. CME on recent advances in the management of solid tumors in adult and pediatric oncology. Kasthurba Medical College, Manipal, November 2003
2. Management of solitary nodule of thyroid. IMA Mangalore, November 2003.

## RADIATION PHYSICS

Dr Raghu Ram K. Nair	Associate Professor & Head
Dr C.A. Davis	Additional Professor (on leave)
Dr Thayal Singh Elias	Associate Professor
Sri Raghu Kumar P	Assistant Professor
Sri Saju B	Assistant Professor
Sri Giri Purushothaman	Lecturer-Electronics Engineering

**Table - 7:**

Patient Services	Total Number
External Beam Radiotherapy	7420
Brachytherapy	1195
Conventional	
Interstitial Implantation	46
Mould	3
Selectron LDR	16
Microselectron HDR	
Gynaec	1000
Oesophagus	108
Bronchus	12
Others	10
Simulator	5515
Mould Room - Shells & Special blocks	1631

### Academic Activities

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

### Training Program

The three months refresher program in Imageology/Nuclear Medicine and Radiotherapy for radiographers started in 1994 has covered 127 trainees in Imageology/Nuclear Medicine and 28 trainees in Radiotherapy till March 2004. Dr. Raghu Ram K. Nair coordinated the program. Two Dip RP students from BARC, Mumbai attended two months training in 2003.

### Research Projects

#### Project completed:

1. Fabrication of beam direction device for external beam therapy (funded by: STEC, Govt. of Kerala)

Principal Investigator: Sri T.S.Elias

#### Projects ongoing

1. Natural Background Radiation Registry (NBRR) – Physics Studies (Funded by: Health Research Foundation, Japan)
2. Development of indigenous software controlled remote afterloading micro high dose rate system in brachytherapy. (Funded by: DST, Govt. of India)

Principal Investigator: Sri T.S.Elias

3. Phase III randomised comparison of concurrent cisplatin, gemcitabine and radiation followed by adjuvant gemcitabine, cisplatin and radiation in Ca cervix IIB-IVA.

Co-investigator: Sri. P. Raghu kumar

### Awards/Honours/Nominations

#### Dr. Raghu Ram K. Nair

1. Examiner for MD (Radiodiagnosis), DMRD and MD (Radiotherapy) of University of Kerala and PhD qualifying examination, University of Calicut.



2. Research Supervision for the following Ph D programs:
  - i. Calibration, dosimetry and safety in brachytherapy techniques in the treatment of malignant diseases - Sri P. Raghu Kumar, M.G.University, Kottayam
  - ii. Development of a quality assurance protocol, dose measurement and radiation safety evaluation in CT Scanners - Sri K.A.Davis, M.G.University, Kottayam
  - iii. Modification of radiotherapy by physical parameters- Dr Sajeed A, Kerala University

**Sri. P. Raghu Kumar**

Supervising guide for M.Sc. Physics project students.

**Sri. Thayal Singh Elias**

Awarded PhD degree in Physics by the University of Kerala in December 2003 for the thesis, "Design, development and evaluation of indigenous computer controlled remote afterloading system for the treatment of carcinoma cervix".

**Conferences / workshops attended / papers presented**

**Dr. Raghu Ram K. Nair**

1. 25<sup>th</sup> Annual National conference of Association of Radiation Oncologists of India, Kochi, 20 - 23 November 2003.
2. XIth annual conference on medical physics and radiation safety, Apollo Speciality Hospital, Chennai, August 2003. Paper: "Doppler Ultrasound- an overview".
3. 14<sup>th</sup> Annual conference of the Association of Medical Physicists of Kerala, 15 February 2004, Trivandrum. Presented the 9<sup>th</sup> Dr TP Ramachandran memorial oration, 'Low dose radiation and the LNT controversy'.

**Dr. Thayal Singh Elias**

1. Annual conference of Association of Medical Physicists of Kerala, Trivandrum, 15 February 2004.
2. 24th National conference of Association of Medical Physicists of India, Patna, 8-11 December 2003
3. 25<sup>th</sup> Annual National conference of Association of Radiation Oncologists of India, Kochi, 20 - 23 November 2003

**Sri. B. Saju**

1. Annual conference of Association of Medical Physicists of Kerala, Trivandrum, 15 February 2004. Paper: "Program to compute radiation beam output as per TRS 277".
2. Workshop on IMRT at Apollo Cancer Hospital, Chennai, January 2004

## ANAESTHESIOLOGY

Dr. Rachel Cherian Koshy	Associate Professor and Head
Dr. Mary Thomas	Assistant Professor
Dr. Venugopal A	Assistant Professor
Dr. Renju Kuriakose	Assistant Professor
Dr. Mallika Balakrishnan	Assistant Professor
Dr. Ajay Pillai	Assistant Professor

The division provided anaesthetics for all major surgical procedures, day care surgeries, endoscopic diagnostic and therapeutic procedures, post surgical intensive care, paediatric and adult central venous cannulations and diagnostic procedures (CT scans, biopsies), radiation therapy for non-co-operative children in addition to the daily pre anaesthetic clinics (PAC).

New cases seen in PAC	2316
Review cases in PAC	2498
Total	4814
GA cases	2333
Major surgical procedures	2070
Day care procedures	263

**Table - 8: Site wise breakup of cases done under anaesthesia**

Head and Neck	905
Breast	583
Gynaec - Uro	227
Thorax & Abdomen	258
Extremities/Sarcoma	65
Skin & Miscellaneous	32

**Table - 9: Special anaesthesia techniques**

Total Intravenous anaesthesia given	229
Blind nasal intubation	85
Fiberoptic intubation	21
Laryngeal mask airway	10
GA + Epidural	317
SAB + Epidural	81
Epidural alone	7
Other Blocks (cervical plexus, ankle block Brachial block)	13
Post operative Elective Ventilation	14

### Academic activities

The division provided major support for the organization of 'Palliative care CME' on 25<sup>th</sup> April 2003 and 'Post-laryngectomy voice rehabilitation workshop' on 25<sup>th</sup> and 26<sup>th</sup> August 2003.

### Ongoing research projects

#### Dr. Mary Thomas

Morphine sparing effect of Parecoxib Sodium. Clinical trial to confirm the analgesic effect of parecoxib sodium in the postoperative period after mastectomy compared to morphine.

#### Dr. A. Venugopal

A comparative evaluation on the efficacy of topical anaesthesia of airway using lignocaine VS intravenous route for pressor response alternation during laryngoscopy and intubation.

### **Conferences / Workshops attended / Nominations**

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

1. 25<sup>th</sup> Annual National conference of Association of Radiation Oncologists of India, Kochi, 20-23 November 2003.
2. International workshop on post-laryngectomy and voice rehabilitation, RCC, Trivandrum, 25 - 26 August 2003.
3. Annual conference of Indian Society of Anaesthesiologists, Thrissur, October 2003.
4. 2<sup>nd</sup> annual symposium and workshop organized by Indian Society of Critical Care Medicine, New Delhi, 31<sup>st</sup> October to 3<sup>rd</sup> November 2003.
5. Elected Vice President of Indian Society of Anaesthesiologists (Kerala Chapter).

#### **Dr. Mary Thomas**

1. 5<sup>th</sup> Annual conference of Indian Society of Neuroanaesthesiology and Critical care, NIMHANS, Bangalore, 6-8 February 2004.
2. Annual conference of Indian Society of Anaesthesiologists, Thrissur, October 2003

#### **Dr. A.Venugopal**

1. Annual conference of Indian Society of Anaesthesiologists (ISA), Thrissur, October 2003. Won best paper award.
2. Annual national conference of ISA, Orissa state branch, Bhubaneswar, 25 -30 December 2003.
3. International workshop on Post-laryngectomy voice rehabilitation, RCC, Trivandrum, 25-26 August 2003

#### **Dr. Mallika Balakrishnan**

1. International workshop & CME on pain update conducted by Mayo clinic & University of Minnesota at St. John's Medical College, Bangalore.
2. International workshop on Post-laryngectomy voice rehabilitation, RCC, Trivandrum, 25 -26 August 2003

#### **Dr. Ajay Pillai**

1. Annual conference of Indian Society of Anaesthesiologists, Thrissur, October 2003.
2. 5<sup>th</sup> annual conference of Indian Society of Neuroanaesthesiology and Critical care, NIMHANS, Bangalore, 6-8 February 2004.

## BASIC RESEARCH

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

The Research Division strives to better understand the alterations in the basic mechanisms occurring in cancer at the molecular, immunologic and cytogenetic levels and to circumvent these to the benefit of the patient. In order to achieve this goal, the potentials of these alterations are evaluated for use as diagnostic and prognostic indicators. At present, the main thrust is on the potential application of some of the ayurvedic drugs and indigenous plants & plant products which, could be fine-tuned to cancer therapy applications.

**Molecular biology of cancers:** Markers identified, which could be of use in cancer management, indicate that (1) defect in regulation at transcriptional level rather than at the genomic level is responsible for over expression of Cyclin D1, (2) Frequency of mutations in p53 gene (SSCP) is very low in oral carcinoma, (3) H-Ras mutations are not frequent in the oral cancers of this region and (4) microsatellite instability of chromosomes 3 and 9 showed chr 9 to harbour a higher degree of instability. This could explain the defects in the p16 protein, a very important regulator of cell cycle located on chr 9, in oral cancers.

Analysis of the epidermal growth factor receptor in gestational trophoblastic disease showed a reduction in the extracellular domain (ECD) suggesting truncation of the protein. Evaluation of the phosphorylation (active) status of the receptor showed a higher activation in the persisting disease group of patients correlating well with the absence of the ECD suggesting that in therapy antibodies to the internal domain of EGFR would be more useful.

The role of proteolytic enzymes in the progression and invasion of ovarian and gastrointestinal cancers is another area of investigation. Studies in nasopharyngeal carcinoma (NPC) revealed 69% & 30% of the lesions harbour EBV and HPV respectively. Clinically useful findings that emerged out were (1) presence of circulating antibodies to p53 as a highly reliable marker of radioresistance in oral cancers and (2) detection of EBV-DNA in serum could be a potential marker for early detection of NPC.

**Cytogenetics of cancer:** Studies were centred around the effect of interferon in patients with CML, germline BRCA2 mutations in breast cancer patients and inherent DNA damage repair capacity in lung cancer patients. Haematological remission was achieved in 122/123 patients (99.18%) on interferon therapy. Complete haematological response was observed in 97/122 patients (79.5%), partial response was observed in 25/122 patients (20.49%) and cytogenetic response was encountered in 94 (76.42%) patients. The follow up is being continued to evaluate its effect on delaying disease progression and prolong overall survival.

BRCA 2 mutation analysis was carried out for the first ten coding exons (exon 2-11) using Conformation Sensitive Gel Electrophoresis (CSGE) technique in which, variant bands were detected in 16 / 44 patients (36.36%). A good correlation seems to exist between deficient DNA repair capacity and lung cancer susceptibility. Increased mean chromatid break/cell is indicative of the cancer prone phenotype and deficient DNA repair capacity may be considered as a marker for cancer predisposition.

**Immunology of cancers:** The T cell anergy analysis in oral and cervical cancer patients so far showed a defect in T-cell signal transduction in a proportion of these patients due to reduced stimulation of some of the transducing proteins in the pathway.

**Plant products and evaluation of alternate systems of medicine:** *Momordica charantia* Lectin (MCL), a galactose specific lectin (130 kDa) with no lymphocyte mitogenic activity has been identified from the seeds of Bitter gourd (*Momordica charantia*). It has been isolated.

purified and its physicochemical and biological properties have been evaluated. An increase in staining intensity was seen with progression of oral and cervix cancers and acute myeloid leukemia while in breast cancer this was also seen to associate with the metastatic potential. Results suggest MCL to be a potential marker of malignant transformation and metastasis.

The ayurveda preparation, *Indukantha rasayana* is seen to specifically enhance the CD4+ population and the phagocytic activity of macrophages. Efforts are on to study the activity of all of its 18 components. The effect of the rasayana in animals receiving chemotherapy is being evaluated. The results suggest its potential use in patients with immunodeficiency and CD4 lymphopenia.

#### Ongoing Research / Doctoral Programmes

1. Evaluation and validation of molecular markers in oral cancer- A multi centric study.
2. Molecular alterations in nasopharyngeal cancer with special reference to oncogenes and tumour suppressor genes.
3. Analysis of molecular alterations in GTD with reference to treatment potential
4. Evaluation of T cell mediated signal transduction in oral cancer patients in relation to immune response and response to therapy.
5. T cell mediated signal transduction: correlation with immune response and response to therapy in patients.
6. Adhesion protein as metastatic markers
7. T cell signal transduction in correlation with immune response and response to therapy in patients with cancer of the uterine cervix.
8. Molecular alterations in relation to radiation response in squamous cell carcinoma.
9. Analysis of molecular alterations of epidermal growth factor receptor in GTD

10. Immunomodulatory activities of Rasayana: *Indukantha Ghrita* in experimental animals
11. Rb protein and related genes in the regulation of cell cycle progression in oral cancer
12. Molecular alterations in nasopharyngeal carcinoma with reference to cell cycle regulatory genes and tumour suppressor genes
13. Incidence of Human Papillomavirus in oral precancers and cancers
14. p16 and p53 expression in oral sub mucus fibrosis
15. Cytogenetic and haematologic response studies of Alpha Interferon therapy in chronic myeloid leukemia patients.
16. Prognostic evaluation of karyotype changes and telomerase activity in preleukemic and leukemic conditions.
17. Genetic studies in Down syndrome patients with and without malignancies
18. Cytogenetic and haematologic response studies of Alpha Interferon therapy in Chronic Myeloid Leukemia patients
19. Cytogenetic studies in myelodysplastic syndromes
20. Cytogenetic and molecular genetic studies in acute non lymphocytic leukemias
21. Genetic susceptibility studies in lung cancer
22. Molecular genetic analysis of germline BRCA2 gene mutations and pathobiology of BRCA2 gene mutated hereditary breast cancer
23. Genetic profile of fetal wastage -A hospital based study
24. Genetic determinants of radiation response in uterine cervix cancer patients undergoing radiotherapy
25. Characterization of molecular alterations in p53 and Cyclin D1 gene in oral carcinoma.



26. Studies on cell cycle regulatory proteins in oral carcinoma
27. Characterization of molecular alterations in p53 gene in oral carcinoma
28. Characterization of molecular alterations in INK4A/MTS-1/p16 gene in oral carcinoma
29. Characterization of molecular alterations in Cyclin D1 gene in oral carcinoma
30. Molecular studies on involvement of p14/ARF gene in oral carcinoma

#### Training Programmes:

1. Annual immunology training (2 months) for M.D. Microbiology students, Medical College, Trivandrum
2. Training for M.Sc. Projects students from various universities
3. Lectures and practical demonstrations to students of M.Sc. Biotechnology, M.Sc. Biochemistry, B.Sc. Biochemistry & B.Sc. MLT students from various universities

#### Patient related investigations for clinical management

1. Bone marrow karyotyping : 250
2. Peripheral blood lymphocyte karyotyping : 121

#### Conferences attended / Papers presented / Training programmes / Awards

##### Dr. Prabha Balaram:

##### Positions held:

- Executive -  
Committee member : Indian Society for Radiation Biology  
Member : Governing Body, Amala Cancer Centre, Thrissur  
Executive Member : Indian Association of Biomedical Scientists  
Executive Member : Indian Association of Cancer Research

##### Referee for research projects and publications:

ICMR : 9      CSIR : 1      DST : 6      DBT : 1      STED : 5

##### Conferences attended / Papers presented

1. Task force on medical biotechnology, immunodiagnostics and vaccines, New Delhi, 29-30 April 2003
2. DBT meeting on multicentric study in molecular markers in oral cancer, 25-28 August 2003.
3. 25<sup>th</sup> Annual national conference of Association of Radiation Oncologists of India, Kochi, 20-23 November 2003.
4. International symposium on molecular medicine and cancer: contemporary issues, Bombay, 1 February 2004.
5. 'Adhesion proteins in cancer: Differential involvement in the metastatic process'. 23<sup>rd</sup> Annual convention of the Indian Association of Cancer Research (IACR): Bombay, 29-31 January 2004
6. 'Epidermal growth factor receptor in cancer- the multifunctional protein'. National seminar on cancer genomics, Madurai, Tamil Nadu, 28 February 2004.

##### Papers presented: in the 23<sup>rd</sup> IACH annual convention, Bombay, 29-31 January 2004

1. Expression of angiogenesis factor VEGF as prognosticator in primary nasopharyngeal cancer and its relation to EBV infection.
2. Aberrant expression of metastatic proteins in cervical neoplasia: Role of HPV infection.
3. Epidermal growth factor receptor and enhanced cell survival in complete hydatidiform moles (CHM).
4. Immunomodulatory action of Indukantha Ghrita on T Cell subpopulation & cytokine secretion in mice
5. Expression of p53 mediated damage response genes in relation to radiation response in oral cancer patients.

6. p53 antibodies in the sera correlate with radiation response in oral cancer.

#### Dr. Ravindran Ankathil

1. 16<sup>th</sup> Kerala Science Congress, Kozhikode, 29-31 January 2004
2. 6<sup>th</sup> Refresher course in life sciences for teachers from universities and colleges from different parts of India, 7 July 2003.
3. "The new genetics revolution in health care", Workshop/seminar on current trends in forensics and clinical application of biotechnology, AIMS, Kochi, 1 November 2003.
4. 25<sup>th</sup> Annual national conference of Association of Radiation Oncologists of India (AROI), Kochi, 20-23 November 2003.

*Papers presented: in the 25<sup>th</sup> AROI conference, Kochi, 20-23 November 2003.*

1. Deficient DNA repair capacity as a genetic susceptibility marker in cancer families.
2. Familial cancers : The Regional Cancer Centre, Trivandrum perspective.

#### Awards:

1. Dr. Premnath Wahi (ICMR) award for research work in cytology and preventive oncology, 2003
2. Dr.S. Vasudev award from the Science Technology & Environment, Govt. of Kerala, January 2004.

#### Dr. Kannan S

1. IACR/NSU/ISI International course on molecular epidemiology, National University of Singapore, Singapore, 21-26 September 2003.
2. 'Significance of promoter methylation in the downregulation of p18<sup>INK4A</sup> gene in oral carcinoma'. 16<sup>th</sup> Kerala Science Congress, Kozhikode, 29-31 January 2004.

3. 23<sup>rd</sup> Indian Association of Cancer Research (IACR) annual convention, Mumbai, 29-31 January 2004

*Papers presented: In : 23<sup>rd</sup> IACR Annual convention, Mumbai, 29-31 January 2004.*

1. p14<sup>ARF</sup> methylation associated with good prognosis in oral carcinoma.
2. Biological determinants: Choice of individualised radio-fractionation regimes in oral carcinoma.
3. Cyclin D1 870A/G polymorphism not associated with susceptibility to oral carcinoma.
4. Lack of BRAF mutation in oral carcinoma

#### Dr. Remani P

1. 16<sup>th</sup> Kerala Science Congress, Kozhikode, 29-31 January 2004.
2. Regional conference of IUCN members on the Commission for Education and Communication. Trivandrum, 30-31 October 2003.
3. South Asian regional training/workshop for empowerment of women with traditional knowledge for sustainable utilisation of local biological resources. Lucknow, 7-16 April 2003.

#### Bindu L

Training in FISH and flow cytometry techniques. Nagasaki University, Japan, 1 August-31 October 2003.

#### Hariharan S

1. 23<sup>rd</sup> Indian Association of Cancer Research (IACR) annual convention, Mumbai, 29-31 January 2004.
2. Molecular cytogenetic training: FISH and RT-PCR. Tata Memorial Hospital, Mumbai, 8-29 August 2003.

## MOLECULAR MEDICINE, DRUG DEVELOPMENT AND CHEMOINFORMATICS

Dr. M. Radhakrishna Pillai      Additional Professor & Head

The Division of Molecular Medicine, Drug development and Cheminformatics was founded on the understanding that basic research in molecular and cellular biology is fundamentally important to advancement of medical sciences. Work in the division is, interdisciplinary and interdepartmental, including both basic scientists and physician scientists. The educational program of the division ranging from training graduate, postgraduate and doctoral students involves a close participation of basic and clinical scientists in every step of the educational process. The division seeks greater, more comprehensive understanding of human biology and disease, which forms the primary goal of biomedical research.

### **Molecular determinants of treatment response in osteosarcoma**

Study showed a poor event free survival for patients with a lower apoptotic index and a better disease free survival for those who showed absence of p53 mutations when compared to those carrying mutations. Similarly a significant correlation between low immunoreactivity of Ki-67 as well as P glycoprotein and disease free survival were observed among patients. These results may therefore be useful in identifying patients who show a poor response to chemotherapy and also in planning the appropriate chemotherapeutic regime.

### **Invasion and metastasis in the oral mucosa**

The study analyzed two members of the gelatinase group of metalloproteinases (MMPs)- MMP2 and MMP9 responsible for tissue invasion and metastasis and their tissue inhibitors TIMP1 and TIMP2. Results showed significant difference in the enzyme activity of MMP2

& MMP9 across histological grades and immunohistochemical localization of MMP and TIMPs showed a significant correlation with the progression from normal -- leukoplakia -- invasive cancer. There was a significant positive correlation between the activity of the total MMP9 and nodal metastasis, clinical stage, and grade of the tumor. These results suggest the evaluation of MMP and TIMP protein expression and activity as a prognostic factor for oral carcinoma.

### **Clinical significance in breast cancer polymorphisms in estrogen metabolizing genes**

Breast cancer is the most common cancer among women worldwide, so is the case with women in Thiruvananthapuram. Single nucleotide polymorphisms of the two genes (*CYP17* and *SULT1A1*), coding for the two steroid metabolizing enzymes involved in hormone biosynthesis and metabolism, may result in the inter - individual variability in steroid hormone metabolism and eventually influence breast cancer development. This study showed an increased risk of breast cancer among postmenopausal women having the variant *CYP17* and *SULT1A1* genes and both these genotypes could be important determinants of breast cancer risk in Indian women.

### **Genetic susceptibility to acute lymphoblastic leukemia**

Biotransformation plays a crucial role in carcinogen activity and many genetic polymorphisms in xenobiotic metabolizing enzymes have been associated with an increased risk of cancer. These variations could play a role in the risk of developing pediatric acute lymphoblastic leukemia (ALL) by their varying action on environmental carcinogens. Our studies have shown an increased risk of childhood ALL, in children with variant *CYP1A1* genes as well as deletions of *GSTM1*. Presence of variant *XRCC1* DNA repair genes has also been shown to increase susceptibility to childhood ALL.

### **Pre-clinical development and molecular pharmacology of arsenic containing compounds as an anti-tumor and anti-viral agent in human papillomavirus associated cervical cancer**

The drug development program of this division has been searching for compounds in complementary and alternative systems for validating them in terms of modern pharmacology. The use of arsenic has been documented in Ayurveda and Siddha as a primary ingredient in anti cancer preparations. Molecular analysis of a test compound is being carried out.

### **Chemoinformatics and new product development**

Work on this new area, Chemoinformatics commenced in November 2003, is complementing molecular medicine techniques in a novel pathway to drug discovery. Initially, two oncoproteins have been chosen as molecular targets against which inhibitors need be discovered/designed. This will be implemented through virtual screening of chemical databases based on molecular docking. The three dimensional structures of these oncoproteins as predicted by homology modeling have been obtained, by making use of web based bioinformatics tools. The energy-minimised structures can be used for subsequent molecular docking experiments.

### **Ongoing research projects**

1. Significance of programmed cell death in pediatric acute lymphoblastic leukemia. (Funded by : Dept of Science & Technology, Govt. of India, 2000-2003) [With Dr. P. Kusumakumary, Division of Paediatric Oncology].
2. Estrogen receptor gene polymorphism in Indian breast cancer and response to tamoxifen treatment. (Funded by: Kerala State Committee for Science, Technology & Environment, 2000-2003) [With Dr. B. Rajan, Breast Specialty Clinic].
3. Fund for Improvement of Science & Technology Infrastructure in Universities and Higher Educational Institutions. (Funded by: Dept of Science and Technology, Govt. of India, 2000 - 2005)
4. Chemotherapy response in osteosarcoma: role of intrinsic cellular factors. (Funded by: Indian Council for Medical Research, 2001 - 2003) [With Dr. Geetha N, Division of Medical Oncology].

5. Polymorphism in CYP1A1, GSTM1 and XRCC1 genes and susceptibility in oral cancer. (Funded by: Dept. of Biotechnology, Govt. of India, 2001 - 2004) [With Dr. R. A. Bhisey, Cancer Research Institute, Mumbai].
6. Human papillomavirus E6, E7 and p53 gene polymorphism in Indian cervical carcinoma. (Funded by: Indian Council of Medical Research, 2002 - 2004)
7. Cellular and molecular manifestations of natural plant compounds on human papillomavirus infected cells. (Funded by: Indian Council of Medical Research, 2002 - 2004)
8. Ras gene mutation and tumor response to radiation therapy. (Funded by: Kerala State Committee for Science, Technology & Environment, 2003 - 2004) [With Dr. Jayaprakash Madhavan, Department of Radiation Oncology].
9. Cellular pharmacology of anti-tumor and anti-viral activity of curcumin against cervical cancer. (Funded by: Council of Scientific and Industrial Research, 2003 - 2006).
10. Molecular markers for the detection and progression of cervical cancer. (Funded by: Department of Biotechnology, 2003 - 2006)

### **invited talks / Fellowship**

#### **Dr. Radhakrishna Pillai M.**

1. Epidemiology, molecular epidemiology and nutri-genomics of Indian cervical cancer. Invited talk. National Centre for Biological Science, Bangalore, August 2003.
2. 2003 Asian HPV Summit. Talk: 'Cervical cancer in India', Sydney, Australia, November 2003.
3. Elected fellow of the National Academy of Sciences.

### **Training Programme:**

Training in cell and molecular biology for B.Sc., B.Tech (biotechnology) and M.Sc. Biotechnology & Biochemistry students from various colleges. MD and MDS students are carrying out post graduate theses.

# EPIDEMIOLOGY & CLINICAL RESEARCH

Dr. Aleyamma Mathew Associate Professor

Ms. Padmakumary Amma G Lecturer in Biostatistics

Dr. Kalavathy M C Lecturer in Epidemiology

Ms. Binu Jose Jacob Lecturer in Biostatistics

## Cancer Registrars

1. Hospital Cancer Registry, Regional Cancer Centre,  
Trivandrum (Partially funded by Indian Council of Medical  
Research, New Delhi)

A total of 7999 patients were reported during the year 2001. Please  
see Tables 10 to 13.

Table - 10: Hospital Cancer Registry - Thiruvananthapuram : Cancer Cases of 2001  
Age by Site - Males

ICD 10 SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total
C00	0	0	0	0	0	0	1	0	2	1	0	2	1	0	4	1	13
C01	0	0	0	0	0	0	1	0	1	6	12	7	12	4	4	4	51
C02	0	0	0	0	0	0	0	0	0	2	12	7	12	4	4	17	64
C03	0	0	0	1	0	2	5	18	24	24	31	25	12	17	11	82	192
C04	0	0	0	0	0	0	1	0	0	0	13	9	6	15	8	3	61
C05	0	0	0	0	0	0	1	5	5	5	9	13	9	8	3	8	67
C06	0	0	0	0	0	0	4	5	3	5	8	8	5	11	8	8	67
C07	0	0	0	0	0	2	3	12	28	27	48	35	25	35	16	225	528
C08	0	1	0	0	0	2	1	1	2	4	3	2	7	4	3	1	31
C09	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	4	14
C10	0	0	0	0	0	2	2	3	3	6	8	8	6	3	3	3	37
C11	0	0	0	0	0	0	0	2	2	3	6	8	6	3	3	2	32
C12	1	0	2	5	2	3	3	3	1	10	9	16	10	8	8	1	62
C13	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	23	54
C14	0	0	0	0	0	0	0	0	0	0	6	9	10	14	11	10	62
C15	0	0	0	1	1	1	2	1	2	7	9	9	13	12	9	3	65
C16	0	0	0	0	0	1	2	1	2	2	3	3	3	2	0	1	21
C17	0	0	0	0	0	0	1	3	6	24	48	57	39	30	23	246	577
C18	0	0	0	0	0	0	6	7	13	24	25	33	33	26	16	13	169
C19	0	0	0	0	3	2	3	5	10	10	8	10	6	4	0	1	69
C20	0	0	0	0	0	0	0	0	2	1	1	2	3	3	0	12	28
C21	0	0	0	0	0	1	3	5	9	8	9	13	18	17	14	7	102
C22	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	3	6
C23	0	0	0	0	0	1	5	15	10	18	11	16	10	9	5	7	113
C24	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	4
C25	0	0	0	0	0	0	1	3	7	7	3	4	3	11	6	2	50
C26	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	2	6
C27	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	6
C28	1	0	0	0	0	0	0	0	1	2	2	2	4	2	2	2	12
C29	1	0	0	0	0	1	2	3	8	16	22	34	36	30	24	17	196
C30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C31	0	0	0	0	0	1	2	3	8	16	22	34	36	30	24	17	196
C32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C36	3	1	1	1	2	3	5	3	1	1	2	2	4	2	2	2	12
C37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C38	1	4	14	19	5	3	4	2	1	1	1	1	1	1	1	1	55
C39	1	1	2	4	2	2	2	1	1	1	1	1	1	1	1	1	18
C40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Hospital Cancer Registry - Thiruvananthapuram : Cancer Cases of 2001

### Age by Site - Males (Table-10 Conld.)

ICD 10 SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total		
C44 SKIN OTHER	-	-	-	-	-	1	1	2	4	7	8	6	13	10	4	10	43	1.48	
C47 PERIPHERAL NERVS	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	3	0.07	
C49 COLO. TSS	-	-	-	-	-	-	1	-	-	-	1	1	-	-	-	1	7	0.16	
C50 BREAST	3	2	2	4	3	4	4	4	5	4	5	2	2	3	1	1	46	1.08	
C60 PENIS	-	-	-	-	-	-	1	1	1	2	1	3	2	1	1	1	14	0.33	
C61 PROSTATE	-	-	-	-	-	-	-	-	1	2	3	3	2	2	2	5	24	0.6	
C62 TESTIS	4	-	-	-	-	-	-	-	1	2	3	7	14	17	14	14	72	1.69	
C63 KIDNEY	3	-	-	2	2	9	5	5	2	7	2	1	-	-	-	1	34	0.8	
C65 RENAL PELVIS	-	-	-	-	-	-	-	2	1	2	5	3	6	8	2	1	33	0.77	
C67 URICACIDUR	-	-	-	1	-	-	-	-	1	3	5	6	10	14	20	10	7	75	1.75
C68 OTHER URICACIDUR	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	0.02	
C69 Ovary	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0.09	
C70 MENINGES	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	2	0.05	
C71 BRAIN	7	6	2	8	11	12	17	20	3	21	9	7	4	2	3	5	142	3.33	
C73 NERVOUS SY.	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.02	
C73 THYROID GL	-	-	2	3	4	7	10	20	6	15	15	7	6	-	-	-	102	2.35	
C74 ADRENAL GL	3	1	-	-	-	-	-	-	-	-	-	1	1	-	-	-	6	0.14	
C75 OESOPH. GL	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	0.02	
C76 ALL LINF. SIT.	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	0.02	
C77 ECO LYMPH. N	-	-	-	-	-	1	3	8	8	14	10	23	21	20	14	17	133	3.12	
C78 SEC. RES. ETC	-	-	-	-	1	2	5	2	2	9	9	12	9	4	6	10	71	1.65	
C79 SEC. OTHER	1	1	-	-	-	-	-	2	4	5	6	10	8	9	13	3	64	1.5	
C80 PRIM. UNCL.	-	-	-	-	-	-	-	2	4	5	6	10	8	9	13	3	64	1.5	
C81 HODGKINS. D.	3	3	6	7	8	7	2	9	6	2	3	2	-	-	1	1	39	0.9	
C82 FOLLICULAR NH	-	1	-	1	1	1	1	6	2	5	5	5	4	-	-	1	39	0.9	
C83 DIFFUSE NH	3	5	2	6	5	2	5	8	1	7	10	12	7	9	8	10	102	2.35	
C84 T-CELL LYMPHO	-	-	-	-	1	2	2	2	5	5	4	4	5	2	3	1	54	1.2	
C85 OTHER NHL	2	2	4	3	1	2	2	2	5	5	4	4	5	2	3	1	54	1.2	
C90 MULTI MYELOMA	-	-	-	-	-	1	2	2	8	6	6	15	14	9	12	5	65	1.49	
C91 LEUK. LYMPHA.	40	20	15	23	7	3	5	4	4	6	3	-	2	2	1	2	137	3.2	
C92 LEUK. MYELO.	4	4	9	12	14	5	7	7	9	11	15	7	6	3	11	1	129	3.02	
C93 LEUK. MONOC.	1	-	-	-	-	-	-	-	1	3	-	-	1	-	-	-	6	0.19	
C95 LEUK. LNS.	2	-	-	3	1	-	-	-	-	-	-	-	1	-	-	-	8	0.19	
C96 OTHER LEUK & LY	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	0.02	
TOTAL	90	63	64	109	62	41	125	107	245	214	480	502	578	531	578	281	4265		

**Table - 11: Hospital Cancer Registry - Thiruvananthapuram : Cancer Cases of 2001**  
**Age by Site - Females**

ICD 10 SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total	
C00 LP	-	-	-	-	-	-	-	-	-	-	2	2	2	2	5	3	16	0.43
C01 BASE OF TONGUE	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	0.05
C02 TONGUE	-	-	1	-	-	1	2	7	10	10	15	15	17	10	8	8	90	2.08
C03 GUM	-	-	-	-	-	-	-	-	2	6	12	9	10	6	11	5	55	1.27
C04 FLOOR OF MOUTH	-	-	-	-	-	-	-	-	1	1	-	-	1	1	-	-	5	0.13
C05 PALATE	-	-	-	-	-	-	-	-	1	-	-	2	1	2	2	1	9	0.24
C06 OTHER MOUTH	-	-	-	-	-	-	2	1	12	22	20	24	50	15	21	158	4.25	
C07 PAROTID GL.	-	-	1	-	1	-	-	-	3	-	-	-	1	-	-	-	7	0.19
C08 SALIVARY GL.	-	-	-	-	1	-	-	-	2	2	1	-	1	1	-	-	9	0.24
C07 TONSIL	-	-	-	-	-	1	-	-	-	-	1	-	-	1	-	-	4	0.11
C10 GLOTTARYNX	-	-	-	-	-	-	-	-	-	2	1	-	-	1	2	-	6	0.16
C11 NASOPHARYNX	-	-	-	2	2	1	2	2	1	2	-	-	-	-	-	1	15	0.35
C12 PHARYNGEAL TSSU	-	-	-	-	-	-	1	-	-	-	1	-	2	2	1	-	7	0.19
C13 HYPOPHARYNX	-	-	-	-	-	1	-	-	4	4	-	2	3	2	-	2	19	0.51
C15 OESOPHAGUS	-	-	-	-	-	1	1	1	7	9	6	6	16	6	6	6	56	1.5
C16 STOMACH	-	-	-	-	-	3	2	7	6	9	2	8	7	9	2	9	60	1.59
C17 SMALL INTES.	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2	0.05
C18 COLON	-	-	-	-	-	-	1	2	3	6	5	9	5	3	6	1	40	1.07
C19 RECTOSIGMOID	-	-	-	-	-	-	-	-	-	1	2	-	1	2	-	-	6	0.16
C20 RECTUM	-	-	-	1	1	2	1	3	14	6	4	7	12	13	7	7	71	1.9
C21 ANUS & ANAL C.	-	-	-	-	-	-	-	-	1	1	-	1	1	-	1	1	6	0.16
C22 LIVER	2	-	-	-	2	-	1	1	1	-	-	2	2	1	1	-	6	0.16
C23 PAN. & ACC.	-	-	-	-	-	-	-	-	-	-	2	-	-	1	1	-	6	0.16
C24 GALL BLADDER	-	-	-	-	-	-	-	-	2	-	1	-	1	1	-	-	6	0.16
C25 PANCREAS	-	-	-	-	-	-	-	-	1	3	3	5	4	2	3	1	24	0.64
C23 NASAL CAV.	-	-	-	-	-	-	1	-	-	-	1	1	-	-	1	2	6	0.16
C31 ACCESSORY SIN.	-	-	-	-	-	2	-	-	1	1	3	2	-	1	1	3	14	0.37
C32 LARYNX	-	-	-	-	-	-	2	2	1	-	2	1	1	-	-	2	11	0.29
C34 LUNG	-	1	1	7	1	1	5	2	7	8	11	10	7	8	1	1	65	1.67
C37 BLADDER	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	2	0.05
C38 HEART, PERICARD.	1	-	-	1	1	1	1	-	-	1	4	-	1	2	2	1	16	0.43
C40 BONE OF LIMBS	1	-	4	8	-	-	1	-	1	8	1	-	-	1	1	-	23	0.52
C41 OTHER BONE	-	-	1	2	-	1	1	-	1	-	-	1	-	-	1	-	6	0.21
C42 SKIN, MELA.	-	-	-	-	-	-	-	2	-	-	-	1	-	2	-	-	4	0.11



**Hospital Cancer Registry - Thiruvananthapuram : Cancer Cases of 2001  
Age by Site - Females (Table-11 Contd.)**

ICD-10 SITE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	Total
C40 SKIN, OTHER																	31
C41 PROPH. HCN'S																	4
C42 SCLIP/CP/PT.																	9
C43 COLON, IBS.																	0.04
C44 UTERUS																	1.21
C50 BREAST																	133
C51 V.A.V.A.																	26.55
C52 VAGINA																	9
C53 CERVIX																	0.21
C54 BODY UTERUS																	2.25
C55 UTERUS NOS																	0.67
C56 OVARY																	4.20
C57 Ovary NOS																	17
C58 Ovary NOS																	1.23
C60 PANCREAS																	202
C61 PANCREAS																	6.75
C62 PANCREAS																	7
C63 PANCREAS																	5.10
C64 PANCREAS																	1
C65 PANCREAS																	1
C66 PANCREAS																	1
C67 PANCREAS																	1
C68 PANCREAS																	1
C69 PANCREAS																	1
C70 PANCREAS																	1
C71 PANCREAS																	1
C72 PANCREAS																	1
C73 PANCREAS																	1
C74 PANCREAS																	1
C75 PANCREAS																	1
C76 PANCREAS																	1
C77 PANCREAS																	1
C78 PANCREAS																	1
C79 PANCREAS																	1
C80 PANCREAS																	1
C81 PANCREAS																	1
C82 PANCREAS																	1
C83 PANCREAS																	1
C84 PANCREAS																	1
C85 PANCREAS																	1
C86 PANCREAS																	1
C87 PANCREAS																	1
C88 PANCREAS																	1
C89 PANCREAS																	1
C90 PANCREAS																	1
C91 PANCREAS																	1
C92 PANCREAS																	1
C93 PANCREAS																	1
C94 PANCREAS																	1
C95 PANCREAS																	1
C96 PANCREAS																	1
C97 PANCREAS																	1
C98 PANCREAS																	1
C99 PANCREAS																	1

**Table - 12: Hospital Cancer Registry, Regional Cancer Centre, 2001 Leading sites of cancer by sex**

Rank	ICD-10	Site	No.	%	Female			
					ICD-10	Site	No.	%
1	C00 - C06	Oral Cavity	687	16.1	C50	Breast	1003	26.9
2	C34	Lung	546	12.6	C53	Cervix	448	12.0
3	C91 - C94	Leukaemia	293	6.6	C00 - C06	Oral Cavity	345	9.2
4	C81 - C85	Lymphoma & HD	275	6.4	C73	Thyroid	259	9.0
5	C09, C10, C12, C13, C14	Pharynx	247	5.8	C56	Ovary	252	6.7
Total			4265	97.8	Total			62.9
C00 - C06			4265		C00 - C06			3734

**Table - 13: Hospital Cancer Registry, Regional Cancer Centre, 2001 System wise distribution of cancer cases**

3.4	Brain and Nervous System	2.7
21.8	Oral Cavity & Pharynx	10.2
2.8	Thyroid	8.0
18.9	Respiratory System	3.0
0.8	Breast	20.9
10.2	Esophagus & Stomach	2.9
8.8	Other Digestive Organs	4.9
2.6	Urinary tract	0.7
3.3	Reproductive System	22.7
4.8	Bone, Conn. tissue, Skin	3.1
8.8	Leukaemia, MM	8.2
8.4	Lymphoma, HD	3.8
8.8	All Others	5.3
M 4285	Total	F 3734
Total 7899		

## 2. Population Based Cancer Registry, Trivandrum

(Funded by: Cancer Society of Finland)

The registry provides data on cancer incidence and mortality covering a population of nearly 1.2 million in the Trivandrum Corporation (urban population) and adjoining three Community Development Blocks (rural population). The data for the year 1988-1999 was published.

### Cancer Awareness Classes & Cancer Detection Camps

The Division has played an active role in conducting cancer awareness classes and detection camps, for the early detection of different types of cancers.

**Table - 14: Cancer Awareness Classes**

Sl. No.	Place	Date of Class	Number of Participants
1	Monvila, TVM	25-08-03	150
2	Poundukadavu L.P.S., TVM	26-06-03	400
3	Monvila, Don Bosco, TVM	25-07-03	75
4	Arasummoodu, Kattil L.P.S., TVM	27-07-03	100
5	Kulathoor A.M.A. Hall, TVM	15-08-03	160
6	Allinkuzhy L.P.S., TVM	10-09-03	100
7	Pallithura Community Hall, TVM	07-11-03	250
8	Veli, TVM	10-11-03	80
9	Monvila L.P.S., TVM	14-11-03	50
10	Karikkakom L.P.S., TVM	13-12-03	100
11	Oruvathilkotta, TVM	14-12-03	100
12	Oruvathilkotta Library, TVM	19-12-03	30
13	Karikkakom School, TVM	20-12-03	100

14	Poonkulam L.P.S., TVM	10-02-04	100
15	Vazhamuttom H.S., TVM	15-02-04	50
16	B.N.V.School, Thiruvallam, TVM	13-03-04	30
17	C.S.N.Hall, Ottapalam, PKD	13-02-04	700
18	Model School Alathur, PKD	15-02-04	500
19	Koodaranji PHC, Calicut	02-03-04	200
20	Anganwadi training centre, Sreekanthapuram, T.V.M	15-02-04	90
21	Anganwadi training centre, Sreekanthapuram, T.V.M	10-03-04	90

**Table - 15: Cancer Detection Camps**

Sl. No.	Place	Date of Camp	No. of Pre-cancers detected	No. of Cancers detected
1	Monvila, TVM	27-06-2003	5	1
2	Poundukadavu, L.P.S., TVM	28-06-2003	5	0
3	Don Bosco, TVM	30-07-2003	2	0
4	Arasummoodu Kattil L.P.S., TVM	31-07-2003	3	0
5	Kulathoor A.M.A Hall, TVM	17-08-2003	3	0
6	Allinkuzhy L.P.S., TVM	12-09-2003	3	0
7	Pallithura Community Hall, TVM	09-11-2003	1	1
8	Veli, TVM	11-11-2003	2	0
9	Monvila L.P.S., TVM	15-11-2003	0	0
10	Karikkakom L.P.S., TVM	17-12-2003	3	0
11	Oruvathilkotta, TVM	18-12-2003	3	1
12	Oruvathilkotta Library, TVM	21-12-2003	0	0
13	Karikkakom School, TVM	22-12-2003	0	0
14	Poonkulam L.P.S., TVM	11-02-2004	0	0
15	Vazhamuttom.H.S., TVM	12-02-2004	1	0
16	B.N.V.School, Thiruvallam, TVM	14-03-2004	0	0
17	Koodaranji, PHC, Calicut	04-03-2004	5	1

18	Women and Children Hospital, Thycadu, TVM	03-03-2004	3	1
19	Govt. Hospital, Peroorkada, TVM	04-03-2004	2	0
20	Women and children Hospital Thycadu, TVM	09-03-2004	2	0
21	Govt. Hospital, Chirayinkeezhu, TVM	11-03-2004	2	0
22	Govt. Hospital, Neyyattinkara, TVM	13-03-2004	3	1
23	Govt. Hospital, Parassala, TVM	15-03-2004	0	0
24	Govt. Hospital, Vellandu, TVM	17-03-2004	5	2
25	Govt. Hospital Keasavapuram, TVM	19-03-2004	3	1
26	Govt. Hospital, Vithura, TVM	20-03-2004	3	0
27	Govt. Hospital Nedumangadu, TVM	21-03-2004	3	1
28	Govt. U.P.S., Balaramapuram, TVM	26-01-2003	0	0
29	Maruthankuzhy Devi Auditorium, TVM	10-08-2003	2	1

### Ongoing Research Projects

#### Dr. Aleyamma Mathew

1. Case-control study of breast cancer in South Asia comparing rural and urban women (*Collaborators: International Agency for Research on Cancer, Lyon, France*)  
Principal investigators : Dr. Aleyamma Mathew and Dr. B Rajan
2. Cancer ATLAS in India (*Collaborators, National Cancer Registry Programme, Technical wing, supported by WHO*)  
Investigator : Dr. Aleyamma Mathew
3. Pattern of care and survival studies of breast, cervix and oral cancers, Regional Cancer Centre, Trivandrum (*Collaborators; National Cancer Registry Programme, Technical wing, Bangalore*)
4. End Result and Survival after Cancer Treatment of patients reported at Regional Cancer Centre, Trivandrum (*Funded by: Regional Cancer Centre, Trivandrum*)

This project provides a summary index of the efficacy of the existing treatment modalities for various types of cancers and survival of cancer patients. Site-specific proformas were developed and the data abstraction is in progress.

#### Dr. Kalavathy M.C.

1. Cancer and pre-cancer registration and follow up of cancer and pre-cancer cases registered in ECDC, Palakkad.
2. RTI (Reproductive Tract Infection) control programme by Pap smear screening among tribal women of Palakkad District – a pilot study. (*Funded by: KRPLLD, Trivandrum*).
3. Cancer control programme in Trivandrum District as part of National Cancer Control Programme (NCCP), 2003-2004 (*Funded by: Ministry of Health and Family Welfare, Government of India.*)
4. Thiruvananthapuram Corporation Cancer Control Programme (TCCP). (*Funded by: Thiruvananthapuram Corporation.*)

#### Other activities

Training of medical officers and paramedical staff of Thiruvananthapuram Corporation area in early detection and prevention of cancers as part of TCCP & NCCP.

#### Conferences/ Workshops attended /Papers presented / Merits

##### Dr. Aleyamma Mathew

1. 'Rare cancers in India', meeting in Rockville, MD, US. Paper: 'Oral and pharyngeal cancers in India', September 2003.
2. XIX Annual review meeting of NCRP-ICMR, Chennai, 11-14 November 2003. Presented the annual report of the Hospital Cancer Registry, Trivandrum.
3. 25<sup>th</sup> National conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003
4. NCRP (ICMR) -WHO workshop on patterns of care and survival studies in head and neck cancers, cancer cervix, cancer breast, Bangalore, 19-20 January 2004.
5. Elected as Member of the National Academy of Medical Sciences (MNAMS) in the year 2003.

## COMMUNITY ONCOLOGY

Dr. Ramani S. Wesley      Additional Professor & Head  
 Dr. Gigi Thomas          Assistant Professor

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

### 1. Human Resource Development

#### a) Professional education and training:

Trainer trainee programmes were given to 685 doctors, 320 nurses, 1509 community volunteers, 3015 teachers and student representatives, 1119 religious leaders and 378 office workers.

#### International School of Colposcopy:

119 doctors, 20 nurses, 7 paramedicals were given training in colposcopy and treatment of pre-invasive lesions of cervix and low cost cervical cancer detection strategies.

b) **Public education:** Through 71 cancer education programmes 10474 persons were trained using audio visual slides and LCD projection as follows (Table - 16 & 18).

Table - 16: Details of cancer awareness programmes

Sl. No.	Categories	No. of programmes	No. trained
1.	Nurses	6	685
2.	Doctors	7	320
3.	Community Volunteers	5	1509
4.	Student representatives & teachers	7	3015
5.	Bank/Factory/Company workers	3	378
6.	Religious leaders/members	10	1117
7.	Lay public	22	2560
8.	Tribal population	12	890
	Total	60	10474

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

a) A manual on cancer control for doctors, 200 slides, photo albums on colposcopy, 2 CD's, and one video were prepared for training. In addition to this, two booklets, 4 articles in laypress and 58 health education display boards were prepared. The health education materials generated during previous years were distributed among community volunteers and other target groups.

#### b) Exhibitions

Thirty eight exhibitions were conducted which were viewed by around five lakh people the majority of which were lay public.

### 3. Antitobacco programme and campaigns

Tobacco awareness was given to 9474 persons through 63 programmes. The Division organised a major workshop in connection with the World No Tobacco Day based on the current year's theme "Tobacco Free Films and Fashion". The Hon. Minister for Parliamentary Affairs, Shri. M.M. Hassan inaugurated the workshop. The division observed No Tobacco

month in association with the Regional Cancer Association and as part of the programme, cancer awareness programmes were conducted for high school students, health workers, employees of NABARD and for the youth forum of churches. A massive training programme for health workers was also organised at Malappuram.

#### 4. Religious leaders, NGOs and residence associations in cancer control

Community Oncology Division had also conducted tobacco and cancer awareness programs for religious leaders, keeping in mind their influence on the people from their respective religions. Religious leaders like Priests of churches, nuns from convents, promoters of various foundations like SNDP, NSS karayogams and leaders of meditation promoters were educated and trained as key trainers. 302 people from various NGO's and residence associations were empowered and screened for common cancers through 3 programmes.

#### 5. Screening of commercial sex workers

Since the prevalence of Human Papillomavirus and cervical cancer is high among commercial sex workers, 132 commercial sex workers were screened through a project organised by CIDA.

#### 6. 'Health melas'

In connection with 'health mela' sponsored by the Ministry of Health, Govt. of India, cancer prevention and early detection programmes were organized by way of cancer detection clinics & health education classes using videos and CDs in all the 20 parliamentary constituencies in Kerala.

#### 7. Clinics : Early Cancer Detection, Dysplasia, Colposcopy and Breast (Table - 17)

Early Cancer Detection Clinic	Dysplasia Clinic	Colposcopy Clinic	Breast Clinic
Patients screened-7506	Patients screened- 5200	Patients screened-4528	Propagation of breast self examination, clinical evaluation of breast disease and referral for mammography were done for 206 patients
Cra' cancer-57	Oral precancers-225	Colpo directed biopsies-398	
Breast cancer-38	Cra. leukoplakias-122	Pap smears-2373	
Cervical cancers-14	Oral submucous fibrosis-79	LEEP excision-9	
Other cancers-20	Erosive Eichen planus-24	Cryotherapy-47	
Oral precancers-210	Cra benign lesions-95	CIN (1&2)-165	
Cervical precancers-221	Oral biopsies-78	CIN (3)-19	
Benign breast lesions-53	Surgical excision-28	Invasive cancers-17	

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

**Early Cancer Detection Clinics (ECDC):** The peripheral centres and nodal centres are referring patients with precancers and cancers to the ECDC of RCC for confirmation of diagnosis, colposcopy, LEEP, cryotherapy etc. Technical guidance and assistance are also given for the nodal centres of RCC. The main stay of peripheral cancer detection programmes was through 77 cancer detection camps in which 11,728 people were screened.

#### 9. Ongoing research projects:

1. Evaluation of early detection of cervical cancer precursors by Visual Inspection with Lugol's Iodine (VILI) and Visual Inspection

with Acetic Acid (VIA) and magnified VIA (VIAM) in Kerala, India. (Funded by: IARC and Bill Gates)

Principal Investigator : Dr. Ramani S. Wesley

2. Comparative evaluation of three low cost cervical cancer detection strategies of early detection of cervical cancer precursors by cytology, HPV testing, Visual Inspection with Acetic Acid (VIA) and with Lugol's Iodine (VILI) in Kerala, India. (Funded by: IARC and Bill Gates).

Principal Investigator : Dr. Ramani S. Wesley

3. Evaluation of 3 treatment methods (Cryotherapy, Loop Electrosurgical Excision Procedure, Hysterectomy) in the management of cervical precancers. (Funded by: IARC and Bill Gates)

Principal Investigator : Dr. Ramani S. Wesley

4. Assessment of various cellular and molecular markers associated with HPV mediated cervical cancer progression.

Co-Investigator : Dr. Ramani S. Wesley.

5. Prevention and control of cancer disease in the tribal population of Kerala state. (Funded by: Government of Kerala).

Principal Investigator : C. Sreekumar

#### 10. Conferences attended / Papers presented / Training programmes

##### Dr. Ramani S. Wesley

1. IARC International course on cancer epidemiology: Principles and methods. Trivandrum, 1-12 September 2003.
2. European Research Organisation on Genital Infection and Neoplasia (EUROGIN 2003) conference. Paris, April 2003.

##### Dr. Ramani S. Wesley and Dr. Gigi Thomas.

3. 'Early detection of precancerous lesion and their management'. 25<sup>th</sup> Annual National conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003.

##### Other activities

Ramani S. Wesley: Course Director for International school of Colposcopy, sponsored by WHO, Regional Cancer Centre, 2003



Cancer Control at the doorstep of tribal village of Wayanadu.



Table - 18: Details of cancer awareness programmes conducted

SL. NO.	DATE	PLACE	ORGANISED BY	NO. ATTENDED	TYPE OF PARTICIPANTS
1	14/03 - 31/03	Aryand	Trial project	5	Enumerators of trial project
2	14/03 - 31/03	RCC	RCC	3	Doctors
3	21/4/03	Kariyapattinam	N. S. S. Karayogam	55	Lay Public
4	25/4/03	Mavelikkara	Senior Citizens Forum	125	Senior citizens
5	25/4/03	Mullada	Astaya	178	Church members
6	27/4/03	Kappiset	Tribal Project	150	Lay public
7	26/4/03	Eruppode	Tribal project	150	Tribal people
8	26/4/03	RCC	Nursing Division	25	RCC
9	29/4/03	Palhi	Tribal project	82	Tribal people
10	9/5/03	Kozhiam	Holy Cross Hospital	155	Lay public
11	11/5/03	Kowdiar	Maharaja Gardens Residence Association	90	Lay public
12	13/5/03	Poojappara	Akshaya Women's Association	145	Lay Public
13	17/5/03	Ancham	Jerusalem Marthoma Church	255	Church members
14	19/5/03	RCC	RCC	22	B.Sc Nursing students
15	23/5/03	Quilon	Secular Residence Association	165	Lay public
16	28/5/03	RCC	RCC	34	Senior nurses
17	27/5/02	Secretariat	Venilla forum	235	Staff
18	31/5/03	Mullada	Youth forum	75	Members
19	6/6/03	Malappuram	Pain and Palliative Care clinic, Malappuram	650	Health workers

20	10/8/03	Kazhakkulam	RCA	400	High school students
21	11/8/03	Corporation Hall, Trivancrum	RCA	55	Corporation Staff
22	12/8/03	NABARD	RCA	68	Bank employees
23	15/8/03	Trichur	Paramakavu Dawaswam	135	Lay public
24	19/8/03	Kanunagachery	NBRF	118	High school students
25	22/8/03	Idukki	Tribal project	71	Tribal people
26	22/8/03	Kudappancombu	PHC, Chettivilakam	80	Lay public
27	23/8/03	Pampadukuzhy, Idukki	Tribal project	84	Tribal people
28	24/8/03	Kozhimala, Idukki	Tribal project	89	Tribal people
29	1/7/03	Kazhakkulam	IMA	180	25 doctors and 155 lay public
30	17/03-17/03	RCC	Partiative Division RCC	3	Nurses
31	13/7/03	Nalanchra	P.H.C. Chettivilakam	85	Lay public
32	26/7/03	Elippodu	Saaheds Residents' Association	72	Lay public
33	27/7/03	Medical College	Sevika Sangham	56	Members
34	3/8/03	Maruthoor	Chinnaya Youth Centre	87	Members
35	6/8/03	Kayamkulam	St. Marys Higher Secondary School	850	PTA
36	10/8/03	Vattiyoorakavu	Kavalloor Residents' Association	65	Lay public
37	21/8/03	West Fort	RCA	138	Lay public
38	25/8/03	Palghat	Tribal project	68	Tribal people
39	26/8/03	Palghat	Tribal Project	57	Tribal people
40	27/8/03	Araackai	Tribal Project	49	Tribal people
41	30/8/03	Kayyattinkara	OSI Church Kayattinkara	78	Church members
42	31/8/03	Karipuzha	Karipuzha Marthoma Church	95	Church members

43	17/9/03	Vellanadu	Child Development Centre	280	Lay public
44	22/9/03	Chunnakkara	Grama Panchayath	620	Health workers
45	28/9/03	Paruthippara	Marthoma Church	95	Church members
46	11/10/03-12/10/03	Palghat	Jila panchayath, Palghat	100	Doctors
47	13/10/03-15/10/03	Palghat	Jila panchayath, Palghat	150	J.P.-I
48	15/10/03	Perookkada	Training College	85	J.P.F
49	19/10/03	Trivandrum	Homeopathic Association	450	Doctors
50	21/10/03	Trivandrum	Trivandrum corporation	10	Doctors
51	24/10/03	Poundukadavu	Ambedkar Sports & Arts Club	95	Lay public
52	31/10/03	Pochamukku	Marthoma Church	75	Lay public
53	1/11/03	Chest Hospital, Calicut	Chest Hospital Foundation	225	Graduate students & nursing students
54	7/11/03	Paruthura	Trivandrum Corporation Project	125	Lay public
55	8/11/03	Trivandrum	MCH Residents' Association	75	Lay public
56	8/11/03	Nedumangadu	Jayastee Arts and Sports Club	110	Lay public
57	30/11/03	B.N.V Hospital	RCA	125	Lay public
58	2/12/03	RCC	RCC	4	M.Sc nursing students
59	13/12/03	Vattapozha	Careplus	65	Church members
60	14/12/03	Kasargode	A.K.G. Kalakayika Vadi	110	Lay public
61	17/12/03	Pandalam	Asraya	500	Graduates
62	23/12/03	Kollayam	N.S.S.U.N.I, Mannam	75	Graduates
63	11/1/04	A.G's Office	RCA	75	Staff
64	14/1/04	Payanallor Govt. High School	PTA	520	Students

65	19/1/04	Kaliara	Mannarya College of Arts and Science	420	Graduates
66	24/2/04	Wyanad	Tribal project	44	Tribal people
67	25/2/04	Puthenkunnu, Wyanad	Tribal Project	29	Tribal people
68	26/2/04	Chuliyode, Wyanad	Tribal Project	57	Tribal people
69	27/2/04 - 28/2/04	RCC	DHS	30	Doctors
70	3/3/04- 4/3/04	RCC	DHS	30	Doctors
71	22/3/04- 23/3/04	RCC	DHS	40	Doctors

**Table - 19: Details of cancer detection camps**

Sl. No.	Date	Place	Organised by	Total Screened	New Cancers	Old Cancers	Oral Pro-cancers	Other Pro-cancers
1	2/4/03	Edevakkode	Karimbikkonam Anganwadi	34	-	-	1	12
2	6/4/03	Chenganoor	Santhwana	285	2	-	22	14
3	7/4/03	Palayam	Jubilee Memorial Hospital	95	-	-	8	8
4	9/4/03	Kattakkada, Kootappu	Govt.Homoeo Hospital	145	-	-	8	
5	11/4/03	Statue	YWCA	28	-	-	1	
6	12/4/03	Thirumala	Karunya Women's Association	145	-	-	5	
7	23/4/03	Thannithode	PHC Thannithode	342	4	-	7	
8	4/5/03	Ookodu	Netaji Residence Association	134	-	-	1	1
9	9/5/03	Kottiyam	Holy Cross Hospital	186	-	0	3	1

- Clinical posting in Oncology Nursing for 3<sup>rd</sup> Semester M.Sc. students of Paediatric Nursing speciality of College of Nursing, Thiruvananthapuram from 27<sup>th</sup> October to 8<sup>th</sup> November 2003 (4 students)
- Orientation visit for 3<sup>rd</sup> year B. Sc. students of College of Nursing, Calicut on 28<sup>th</sup> February 2004 (38 students)

#### **Nursing Assistants Training Course**

The Nursing Assistants Training Course -5<sup>th</sup> Batch, consisting of 19 students are on their apprenticeship.

#### **Conference / Training programmes attended / Papers presented/ Awards**

##### **Dr. Sr. Vijaya Puthusseril**

Awarded PhD in Behavioural Sciences by Mahatma Gandhi University, Kottayam, for the thesis "Effect of selected complementary therapies (Relaxation therapy and Foot massage) on the quality of life of breast cancer patients" in June 2003.

##### **Ms. Shobha S, Head Nurse**

10 days state level training programme sponsored by DGHS (Delhi) on 'Critical care nursing: Emerging trends', at SCTIMST from 24<sup>th</sup> April to 3<sup>rd</sup> May 2003.

##### **Ms. Mariamma James, Head Nurse**

10 days state level training programme sponsored by DGHS (Delhi) on 'Update in nursing management techniques for ward sisters & nursing administrators' at SCTIMST from 3<sup>rd</sup> May to 10<sup>th</sup> May 2003.

##### **Ms. Lizyamma Jacob, Head Nurse**

2 days programme on 'Prevention of hospital acquired infection in Critical Care Unit', conducted at Center for Excellence, 3M India Limited, Bangalore from 9<sup>th</sup> May to 30<sup>th</sup> May 2003.

**Ms. Saraswathy Amma, Head Nurse; Ms. Prasannakumari, Head Nurse; Ms. Regila Beegum, Head Nurse; Ms. Sindhu S, Staff Nurse.**

10 days state level training programme sponsored by DGHS (Delhi) on 'Managerial skills in oncology nursing', conducted by Nursing Division, RCC from 26<sup>th</sup> May to 5<sup>th</sup> June 2003.

**Ms. Jessamma John, Ms. Rethi Devi, Ms. Suja G, Ms. Biju S.V, Ms. Anithakumary Amma, Ms. Anupama B, Staff Nurses**

10 days state level training programme sponsored by DGHS (Delhi) on 'Oncology nursing: A holistic approach', conducted at RCC from 28<sup>th</sup> April to 8<sup>th</sup> May 2003.

**Ms. Kumari Thankom, Staff Nurse I/C, Palliative care**

25<sup>th</sup> Annual National conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003. Paper: "Nursing issues in palliative care".

**Ms. Sunithakumari S, Head Nurse; Ms. Shamla Beevi, Head Nurse; Ms. Reena A. Thankaraj, Staff Nurse.**

One day programme on 'Towards a state wide strategy for suicide prevention', at the Senate Chamber organized by the Department of Future Studies, University of Kerala on 24<sup>th</sup> January 2004.

**Ms. Sreelekha R, Clinical Instructor; Mareena Silas, Staff Nurse; Ms. Binu O, Staff Nurse; Ms. Sophiya Lilly, Staff Nurse; Ms. Priyadarsini, Staff Nurse; Ms. Fathima Ibrahim, Staff Nurse.**

'Kerala integrated scheme in intervention in suicide', one day training programme organized by Department of Psychiatry at Paediatric Lecture Hall, SAT Hospital on 23<sup>rd</sup> March 2004.

## CLINICAL LABORATORY SERVICES

C. Gangadevi

Technical Officer

Clinical Laboratory Services Division, responsible for primary diagnosis of cancer patients, has one of the well-equipped clinical laboratories of the state. The Division provides 24 hour emergency services for the benefit of OP and IP patients analyzing 475 samples daily. The division has the following sections:-

1. Biochemistry
2. Hematology

**Biochemistry** section is well equipped with fully automated drychemistry analyzers and semi wet chemistry analyzers, doing 175 samples with minimum five parameters per day.

**Hematology** section is provided with four fully automated hematology analysers doing 300 hematology samples per day. The coagulation profile is being done using the machine THROMBOTRACK.

### Quality Assurance

For biochemistry and haematology investigations, collaboration with BIORAD CALIFORNIA.

### Training

Training to B.Sc. MLT and M.Sc. Biotechnology students from different centres and universities.

**Table - 21: Investigations carried out during the year 2003-2004**

Biochemistry Investigations	No.	Hematology Investigations	No.	Urino Analysis	No.	Special Investigations	No.
Sugar	36961	Hemoglobin	92108	Colour	190	IG Assay	436
BUN	32869	Total Count (WBC)	89660	Reaction	962	Eletrophoresis	320
S.Creatinine	33680	Platelet count	86515	Sp.Gravity	193		
Uric Acid	14522	Bleeding Time	5105	Albumin	7019		
Bilirubin	21971	Clotting Time	3024	Sugar	7617		
SGOT	22466	APTT	229	BJP	274		
SGPT	22370	PCV	5985	Bile Pigment	776		
SAP	19010	ESR	4799	Bile Salt	188		
T-Protein	8848	RBC Count	860	Urobilinogen	161		
Albumin	6717	Differential count	18355	Deposit	6788		
Globulin	8502	Retics	87				
Calcium	10694						
Phosphorus	1021						
Cholesterol	416						
Sodium	19233						
Potassium	15366						
LDH	3718						
Amylase	608						
GCT	7739						
Total	292811		310985		25330		755

**BLOOD BANK**

Dr.P.Jayalekshmi

Resident Medical Officer

Mr.P.Meera Sahib

Senior Scientific Officer

During the reporting year there has been considerable increase in the number of Blood Donors, preparation and issue of blood components mainly packed cells and platelet rich plasma compared to previous years. Two Peripheral Blood Stem cell collection had been done on patients using the Cell Separator Machine. Training was provided for B. Sc. MLT students from Lissie Hospital, Cochin and B.Sc. MLT students from Mahatma Gandhi University.

**Table - 22:**

Blood Bank Statistics	Numbers
Blood grouping	- 19850
Cross Matching	- 7140
Blood Donors	- 7001
HIV +ve donors	- 12
HCV +ve Donors	- 66
HbsAg +ve Donors	- 94
VDRL +ve Donors	- 9
<b>Components Prepared</b>	
Packed Red Cells	- 6292
Platelet Rich Plasma	- 5982
Single Donor Plasma	- 356
Fresh Frozen Plasma	- 78
Platelet Pheresis	- 20

## CLINICAL SERVICES & MEDICAL RECORDS

G.Rajasekharan Nair

Medical Records Officer

The following data depict the magnitude of activities of this division.

### Patient attendance during 2003

New cases registered	:	10,190
Review	:	125,366
Hospital deaths	:	593
Daily average	:	440

**Table - 23: Clinic wise distribution of patient attendance during the year**

Clinic	New cases	Review cases
Hemato/lymphoreticular malignancy and Sarcoma	1277	21027
Head & Neck	2119	25183
Breast & Central Nervous System	1698	25648
Gynaec & Genitourinary	1479	20223
Chest & Gastro	2428	13751
Pediatric Oncology	504	11366
Thyroid	663	7158
Private Registration	22	1010
<b>Total</b>	<b>10,190</b>	<b>125,366</b>

**Table - 24: Clinic wise distribution of in-patient attendance during the year**

Clinic	No. of Patients
Hemato/lymphoreticular malignancy and Sarcoma	1764
Head & Neck	717
Breast & Central Nervous System	490
Gynaec & Genitourinary	811
Chest & Gastro	656
Pediatric Oncology	738
Thyroid	272
<b>Total</b>	<b>5448</b>

Average in-patient length of stay: 11.50

### Training:

24 Medical Documentation students of M.G. University, Kottayam completed their 15 days observation study.



## LIBRARY AND INFORMATION SERVICES

M. Chandrakumaran Nair

Senior Librarian

The Library and Information Services Division, being the power house of oncology information, continued to provide latest information to the doctors, scientists, researchers and other users in their day-to-day clinical and research work. Initiatives on the development of digital library was the notable work during the report period.

### Development of Digital Library

The following aspects were covered :

- i. The resources digitized and made accessible over the Intranet and Internet includes:
  - a) RCC Publications from 1981 to present (up to abstract level)
  - b) Reprints (Bibliographic information)
  - c) Complete Library Catalogue
  - d) Holdings list of journals
- ii. Library continued to provide the online access to the following Current Awareness Services like Current Contents (Contents pages of newly arrived current journals), Onconews (Press clippings on oncology and other subjects), Conference Alert, etc on the Intranet.
- iii. Electronic access to full text of 40 journals was also provided on the library network nodes.
- iv. Library has taken membership of DELNET, the Delhi based network of libraries through which online/offline access to many resources not available on the library were made possible.
- v. Online access to INIS database of IAEA.

RCC has been provided with free access to International Nuclear Information System (INIS) database by IAEA which contain about 2.5 million bibliographic records dealing with nuclear sciences and technology, nuclear medicine, radiation physics, energy on environment, etc.

10	10/5/03	Poojappura	Karunya Women's Association	138	.	0	2	0
11	11/5/03	Kowdiar	Maharaja Residents' Association	175	.	.	5	.
12	16/5/03	Karukachal	N.S.S Mission Hospital	135	6	0	15	.
13	24/5/03	Anchal	Jerusalem Marthoma Church	102	2	0	3	.
14	26/5/03	Chengachola	YMCA	38	0	0	2	0
15	15/6/03	Parassuvakka	CSI Church	84	1	.	5	.
16	15/6/03	Trichur	Paramakkavu Devaswam	145	1	0	4	1
17	29/6/03	Mannar	Santhwana	265	1	0	11	0
18	19/7/03	Sultanbathory	Tribal project	110	1	0	5	0
19	20/7/03	Erippude	Tribal Project	63	0	.	3	0
20	6/8/03	Veeranakavu	CSI Church	114	0	0	2	.
21	9/8/03	Varkala	Cida PSH Project	132	1	.	7	.
22	10/8/03	Vattiyazhakkavu	Kavallor Residents' Association	145	0	0	2	.
23	20/8/03	West Fort	HCA	103	.	0	2	.
24	1/9/03	Edapazhanji	S.K.Hospital	156	.	.	3	.
25	13/9/03	Chathanoor	Marthoma Church Chathanoor	98	.	0	6	.
26	20/9/03	Karipuzha	Sevika Sangham	123	0	0	7	.
27	26/9/03	Marakkattukuzhy	Tribal project	125	0	.	7	.
28	20/9/03	Parappatikuzhy	Tribal Project	30	10	0	3	.
29	29/9/03	Kozhimala, Idukki	Tribal Project	84	1	.	6	1
30	31/9/03	Chenganoor	Santhwana	107	4	0	7	4
31	6/10/03	Kottarakara	Vijaya Hospital	39	0	0	0	0
32	8/10/03	Kunnamkulam	CSI Church Kattukonam	160	3	0	1	0
33	17/10/03	Pallikkal	Pallikkal Juma Masjid	165	4	0	9	0

34	22/10/03	Kollam	Krislinapilla Memorial Trust	275	4	0	15	2
35	31/10/03	Pachamukku	Marthoma Church, Poringaloor	130	1	0	14	0
36	2/11/03	Chengamoor	Santhwana	250	4	0	13	2
37	15/11/03	Serikarpathy	Tribal Project	70	3	0	3	0
38	15/11/03	Nallinad	Tribal Project	54	0	0	4	5
39	16/11/03	Palghat	Tribal Project	85	1	0	4	0
45	21/11/03	Kaithakuzhy	Cashew Factory Association	205	3	6	7	0
41	26/11/03	Nedumangad	Jayasree Sports and Arts Club	40	2	0	6	2
42	28/11/03	Neyyattinkara	Koccolkarude Kootam	62	5	0	11	0
43	29/11/03	Punnakkad	RCA	95	2	0	6	4
44	30/11/03	BMW Hospital	RCA	125	1	0	7	1
45	1/12/03	Ilamkavila	Loyola College	105	1	0	2	0
46	7/12/03	Changanassery	Atinata Kendram	358	3	0	15	1
47	21/12/03	Kodungalloor	Health Care Institute	132	7	0	12	0
48	31/12/03	Kalliyoor	Friends Arts and Sport club	125	0	0	16	1
49	3/1/04	Idukki	Tribal Project	102	0	0	6	0
50	4/1/04	Idukki	Tribal Project	41	0	0	4	0
51	4/1/04	Lappakada	Tribal Project	52	0	0	6	0
52	4/1/04	Balarampuram	Lion's Club	225	2	0	2	0
53	9/1/04	Pampadi	Madapatt Church	175	2	0	4	1
54	11/1/04	AG's Office	RCA	163	0	0	3	2
55	16/1/04	Maramalloor	Govt. Women's Polytechnic	215	3	0	9	2

56	17/1/04	Venganoor	Liness Club	75	0	0	5	0
57	18/1/04	Kariavattom	Staff Residents' Association	25	0	0	1	1
58	23/1/04	Venjanmoodu	Shivasena	155	0	0	3	0
59	26/1/04-27/1/04	Nedumangad	DGHS	1000	7	0	8	4
60	1/2/04-3/2/04	Neyyattinkara	DGHS	800	4	0	12	0
61	6/2/04-8/2/04	Thodupuzha	DGHS	325	1	0	10	0
62	12/2/04-15/2/04	Kottayam	DGHS	720	3	0	12	0
63	17/2/04-19/2/04	Moovattupuzha	DGHS	505	0	0	7	0
64	22/2/04	Kottayam	State Bank of Travancore	107	0	0	5	1
65	26/3/04	Chunnakkara	Gramapanchayat	110	3	0	5	4
66	27/3/04	Charumoodu	Gramapanchayat	140	3	0	8	4
67	29/3/04	Bharanikavu	Gramapanchayat	160	6	0	3	0

## PAIN & PALLIATIVE CARE

Dr. Cherian Koshy	Associate Professor
Dr. Vastudevan Mappat	Anaesthesiologist
Dr. R. Manjula	Resident Medical Officer

The Division continues to have multifaceted activities that include outpatient and inpatient services, besides counseling, lymphoedema care, support group meeting, home care, rehabilitation and the conduct of peripheral clinics.

### Clinical Work

New cases	2733
Repeat visits	4242
Lymphoedema service	362

### Courses / Training programmes conducted

1. Training for the second batch of 3 students, in Certificate course in Palliative Care Nursing.
2. Classes on palliative care for doctors from health service, during March 2004 (75 participants).
3. One day volunteers training on palliative home care on 29 November 2003.
4. One day hands on training programme on lymphoedema, complementary therapy and home care.
5. Two weeks hands on training on palliative care nursing.

### Conferences attended / Papers presented / Awards received

#### Dr. Cherian Koshy

1. International Bursary award, to be trained in palliative care at St. Christopher's Hospice, London, November 2003.
2. Health Care Fellowship conference, Colombo, Sri Lanka, 2003.

#### Dr. Prasanth

1. Refresher course in palliative medicine at Amrita Institute of Medical Sciences, Ernakulam, January, 2004 and presented the case report 'Morphine addiction and its management in palliative care'.
2. 11<sup>th</sup> International conference of Indian Association of Palliative Care at PGIMER, Chandigarh, February 2004.

#### Ms. Kumari Thankom

1. 25<sup>th</sup> National conference of the Association of Radiation Oncologists of India, Kochi, 20-23 November 2003. Paper: "Nursing issues in palliative care".

### The following new peripheral Palliative Care Centres were opened:

1. Pain and Palliative Care Clinic, Nedumangad
2. Palliative Care Clinic, Taluk Hospital, Neyyatinkara

### Oral morphine consumption

A total of 14.1 Kg of oral morphine and morphine solution was supplied to the different peripheral clinics.

## DENTAL CARE

Dr. Nalinakumari K.R. Assistant Professor

This Division imparts a variety of treatment modalities for the benefit of cancer patients.

### Highlights of activities

1. Basic procedures like, Oral prophylaxis, Conservative therapy & Dental extractions.
2. Minor surgeries like Oral biopsies.
3. Therapeutic management of pre-cancerous and other oral lesions.
4. Management of temporomandibular problems and trismus.
5. Reconstructive procedures like construction of maxillofacial prosthesis.
6. Pre & Post radiation care of teeth including fluoride gel application.
7. Management of oral problems of patients undergoing chemotherapy like ulcer, spontaneous bleeding, toothache, radiation caries, osteoradionecrosis, etc.
8. Providing occlusal adjustments.

Table - 20: Patient statistics

1. Total number of patients attended to	-	2970
2. Total number of new cases	-	521
3. Biopsies taken	-	50
4. Teeth extracted	-	2558
5. Post-radiation (New cases) care	-	155
6. Post-radiation total number of cases	-	691
7. Maxillofacial prosthesis prepared	-	24
8. Conservative therapy	-	8
9. Oral prophylaxis done	-	69
10. Dental Extraction	-	862

### 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, extractions & oral hygiene instructions for better maintenance during treatment.

Post radiation fluoride therapy, advocated to all patients undergoing radiation in the head & neck region, is one of the best possible ways to protect the teeth from sensitivity and post radiation caries. This therapy is to be continued for about one and a half years or more from the day of radiation. Patients who undergo this therapy have less complaints of oral cavity than those who do not. The burning sensation of the oral cavity and mucositis, during and after radiation therapy & chemotherapy, is managed by the use of soothing, protecting & anti microbial oral rinses and ointments. Other activities include maxillofacial prosthesis for correcting deformities of the face after doing surgery in some cases of oral cancer.

## NURSING SERVICES

Dr.Sr.Vijaya Puthusseril	Chief Nursing Officer & Assoc. Professor
Ms. Graceamma Joseph	Nursing Superintendent Gr. II (left RCC on 27.11.03)
Ms. Flower Augustine	Nursing Superintendent
Ms. S.Geetha	Nursing Supervisor
Ms. Annamma Jacob	Nursing Supervisor

The Division takes the responsibility of providing quality patient care at the out patient & inpatient units of the Centre.

### Training Programmes

1. 'Cancer nursing : a holistic approach', state level training programme for nurses sponsored by DGHS from 28<sup>th</sup> April - 8<sup>th</sup> May 2003. (30 participants)
2. 'Managerial Skills in Oncology Nursing', state level training programme for senior level nurses sponsored by DGHS from 26<sup>th</sup> May - 5<sup>th</sup> June 2003. (30 participants)
3. Clinical posting in oncology nursing for 51 third year B. Sc. students of College of Nursing, Thiruvananthapuram, from 12<sup>th</sup> May to 7<sup>th</sup> June 2003.
4. Orientation/Observation update for students from Karolinska Institute of Sweden under Global Health Exchange Programme affiliated to College of Nursing, Thiruvananthapuram on 21<sup>st</sup> May 2003 (for 18 students & 1 faculty) and on 7<sup>th</sup> January 2004 (for 24 students & 2 faculty members).
5. Clinical posting in Oncology Nursing for 3<sup>rd</sup> year B.Sc. students of College of Nursing, Thalassery from 16<sup>th</sup> June to 18<sup>th</sup> June 2003 for 22 students and from 10<sup>th</sup> July to 12<sup>th</sup> July 2003 ( 24 students)

### Collection development

During the year, library subscribed to 110 journals of which 66 are international. As requested by us, our library was included on the Mailing list of notable institutions and organizations. 417 books, monographs and back volumes, 447 reprints (other than those journals received in the library), 62 CD ROMs and 19 video cassettes were added to library resources collection.

### Procurement of Photocopying machine

Procured a high speed Modii Xerox Copying machine in the library utilizing the financial assistance from IARC International Course on Epidemiology conducted in Trivandrum in September 2003.

### External users/Project students /Training

In addition to the project students in the Centre, on an average 25 external users are visiting the library a day. Library extended reference and other facilities to them. The Division continued to impart one year training to Library and Information Science graduates approved by the Board of Apprenticeship Training, Govt. of India.

### Conferences / workshops attended

#### M.Chandrakumaran Nair

1. International conference on Digital libraries [ICDL 2004]. New Delhi, 24-27 February 2004.
2. 25<sup>th</sup> National Annual conference of Association of Radiation Oncologists of India, Kochi, 20-23 November 2003.

#### Saji S. Nair

Workshop/seminar on datamining, University Library, Cochin University of Science & Technology, Kochi, 11-12 December 2003.

## INFORMATION SYSTEMS

Manoj G Jr. System Analyst

The division continues to support the computerization activities of the Centre. This division maintains 5 servers and 130 PCs through 1 router and 15 hubs. Sco Unix, Linux, Windows 2000 and Windows 9X are the Operating Systems and Ingres, Oracle 8i and MS Access are the databases used. Apart from these, the division maintains the Local Area Network and Sky IP Unit of RCC.

### NEW APPLICATIONS IMPLEMENTED:

#### Cytopathology

A new browser based application program for the cyto-pathology data management, which enables search and viewing results.

#### Executive Committee Minutes Processing System

Developed & implemented new GUI based application software for the Agenda and Minutes processing of the Executive Committee. Minutes of the previous committees are entered. Using this extensive searching is possible.

#### Financial Accounting Package

Developed & implemented a new application for Financial Accounting as part of computerisation of administrative office. The extensive security features of the package enable hierarchical authorization from the officers for passing the documents.

#### Ongoing Projects

Cancer care for rural masses - A Tele-medicine System for Cancer Treatment and Follow-up at RCC and its Peripheral Centres (Funded by: Ministry of IT, Govt. of India & ISRO)

#### Training programmes / Other Activities:

Project guidance to M.Tech, MBA, B.Sc (Computer Science) and PGDCA students from various colleges. The division maintains the database of members of Cancer Care for Life (Scheme II & III) and issues membership certificates.

## EARLY CANCER DETECTION CENTRE [ECDC], ERNAKULAM

Dr. Latha A Cytopathologist

The ECDC, Ernakulam - one of the peripheral centres of RCC, Trivandrum, offers facilities for cancer awareness, early detection, periodic follow up and pain and palliative care for cancer patients.

In addition to the above, the centre is a referral center for other medical centres, providing colposcopy, cytology, histopathology and haematology diagnostic facilities. Participated in the 'Health mela' conducted by Government of India at Paravur for 3 days. Cancer screening camps were conducted in rural and urban areas with assistance from non-governmental and governmental organizations.

Total number of persons screened	: 6072
Number of persons screened in the centre	: 5081
Number of persons screened in the camp	: 991

Table - 25: Details of cytological specimens : 2003-2004

Specimen	ECDC	Camp	Total
Cervical smear	2859	838	3697
Oral smear	240	22	262
Fine Needle Aspiration	1238	118	1354
Sputum cytology	55		55
Colposcopy	4		4
Body fluids	90	15	105
<b>Total</b>	<b>4486</b>	<b>991</b>	<b>5477</b>



**Table - 26: Analysis of gynaecological specimens : 2003-2004**

Lesion	Centre	Follow up	Camp	Total
Normal	216	75	179	470
Inflammation	1105	427	413	1945
Atypical glandular cells	4	2	1	7
<i>Trichomonas vaginalis</i> Infection	407	114	143	664
T.V. with Mild Dysplasia	10	1	1	12
T.V. with Moderate Dysplasia	1			1
T.V. with Severe Dysplasia		1		1
Fungal Infection	18	4	7	29
Fungal infection with atypia	1			1
Human Papillomavirus Infection	5	1	1	7
<i>Herpes simplex</i> Virus Infection	167	48	57	272
Viral Infection with Dysplasia	18	3	5	26
Mixed Infection	135	43	30	208
Mixed Infection with Dysplasia	9	6		15
Mild Dysplasia	2	1		3
Moderate Dysplasia	2	1	1	4
Carcinoma in-situ	1			1
Invasive Squamous Cell Carcinoma	16			16
Adenocarcinoma	2			2
Miscellaneous	7	1		8
Severe Dysplasia	4	1		5
<b>Total</b>	<b>2130</b>	<b>729</b>	<b>838</b>	<b>3897</b>

## EARLY CANCER DETECTION CENTRE [ECDC], PALAKKAD

Dr. I.B. Sulekha Medical Officer

The Early Cancer Detection Centre, Palakkad one of the peripheral centres of RCC, Trivandrum offers facilities for cancer awareness, early cancer detection, chemotherapy, pain and palliative care and 3 months follow up for cancer patients through RCC doctors. This is the only institute in Palakkad, where tribals and sex workers are screened regularly. Cancer awareness classes, slide shows and cancer detection camps were conducted for the following 3 different population groups.

1. People coming to district hospital, Taluk hospital, PHCs and other private hospitals.
2. People from tribal areas like Agali, Sholayoor, Attapadi, Pudur, Walayar and Jellipara.
3. People from industrial area- those working in different companies and those residing near the industrial area.

A total of 39 cancer awareness classes and 37 cancer detection camps were conducted mainly in association with Intervention for Sex Health (ISH) project. Students of VHSE, Ottapalam were given awareness classes and shown cytological procedures on their visit.

Out of the 69 new cases registered at the Pain clinic, 64 were referred to RCC for expert management. Number of follow-ups were 147.

Total number of persons screened	: 9554
Number of persons screened in the centre	: 2250
Number of persons screened in the camp	: 7304

**Table - 27: Details of Cytological Specimens: 2003-2004**

SPECIMEN	ECDC	CAMP	TOTAL
Cervical Smear	603	1266	1869
Oral Smear	77	41	118
Sputum	38	1	39
Breast (FNAC)	57	16	73
Thyroid (FNAC)	9	6	15
Lymphnode (FNAC)	14	6	20
Nipple Discharge	16	4	20
Fluids	5	-	5
Other sites	7	5	12
<b>Total</b>	<b>826</b>	<b>1345</b>	<b>2171</b>

**Table - 28: Analysis of Gynaecological Specimens: 2003-2004**

LESION	ECDC	CAMP	TOTAL
Normal	266	826	1092
Inflammation	199	288	487
T.V. Infection	42	15	57
Fungal Infection	3	2	5
HSV Infection	2	1	3
Endocervicitis	37	90	127
Squamous metaplasia	12	10	22
Mild dysplasia	15	18	33
Moderate dysplasia	4	1	5
Severe dysplasia	5	-	5
Glandular cell atypia	7	13	20
Radiation changes	3	-	3
Squamous cell Ca	7	2	9
Adeno carcinoma	1	-	1

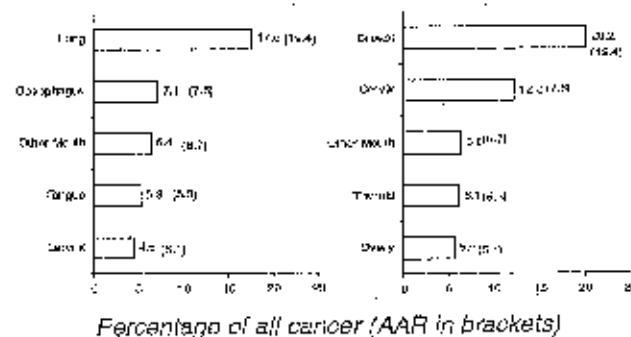
## NATURAL BACKGROUND RADIATION CANCER REGISTRY [NBRR], KARUNAGAPPALLY

Dr. P. Jayalekshmi      Officer -in- Charge

Natural Background Radiation Cancer Registry (NBRR) established in 1990, is Kerala's first Population Based Registry and India's Second Rural Cancer Registry. The studies of this registry is a unique attempt to investigate the cancer occurrence in relation to natural radiation because of availability of a large population and high radiation levels in the same place. The study and community services support have come mainly from Health Research Foundation Japan and Local Area Development (LAD) fund from local panchayaths.

The registry activities covered the total population of the Karunagappally taluk (4,10,000 by 2001 census). During 1998-2001, a total of 1438 cases were recorded, of which 815 were males & 623 were females. The crude incidence rate of cancer was 96.5 for males & 71.2 for females and AAR for males was 105.5 and for females it was 71.8 per 100,000. Lung cancer is leading cancer among males and it is breast cancer among females. The high incidence of lung cancer warrants further studies. The five leading cancer sites among males and females are given below.

**Table - 29: Five Leading Sites of Cancer, 1998-2001**



During the current year, critical evaluation of exposure effects of radiation was attempted in a selected cohort area (Chavara, Neendakara, Panmana and Alappad) and control area (Oachira and Thevalakkara). Using specialized computer package Epicure analysis is being continued.

### Clinical activities

Table - 30: Clinical activities & patient services, 2003 - 2004.

	Nos.	No. of persons attended
Follow-up clinics conducted for treated cancer patients	9	619
Cancer awareness classes	13	1468
Field clinics and detection clinics	14	1190
Cervical screening camps in field	43	1496
Cytology examinations in peripheral hospitals + NBRR(FNAC, Oral Scrape, Cervical Smear, Sputum)	176	1514
Cancer cases detected	38	

The unit examined 3028 cytology smears during the reporting year, in which 40 cases of cervical intra-epithelial neoplasia and 4 squamous cell carcinoma were detected. As part of the palliative care services, 234 advanced cancers were registered.

The division continued to offer pain relief and the inpatient day care and home care services were extended free of cost in all the 12 panchayath areas. The unit takes an effort to educate the volunteers and other local bodies in Palliative Care. Volunteer services are available on the OP days and for home care services. Welfare activities for cancer patients are conducted with the help of charitable organizations.

### Ongoing Projects:

1. Cancer Control and Patient Services - LAD, Government of Kerala
2. Cancer survival in developing countries. (IARC, WHO)
3. Development of an atlas of cancer in India - NCRP, ICMR, India
4. Old age welfare project - Neendakara Grama Panchayat.
5. Cancer palliative care project - Jilla Panchayat, Kollam.

### Conferences / workshops attended / Papers presented / Training programmes

#### Jayalekshmi P

1. Post Graduate training course in Epidemiology of chronic disease, WHO, Geneva, 23 February - 2 April 2004 (6 Weeks).
2. 'Cancer in Karunagappally' - NCRP-WHO workshop on development of an atlas of cancer in India, Bangalore.
3. 'Disability study of head and neck cancer survivors: beyond Karnofskys index'. 25<sup>th</sup> annual national conference of Association of Radiation Oncologists of India, Kochi, 20-23 November 2003

#### Jayalekshmi P & Binu V S

4. IARC International course in cancer epidemiology: principles and methods, Trivandrum, 1-12 September 2003

#### Gangadharan P

5. 25<sup>th</sup> Annual national conference of Association of Radiation Oncologists of India, Kochi, 20-23 November 2003. Paper: 'Breast Cancer'.

#### Gangadharan P, Jayalekshmi P, Jyothilsree R and Kanchana R.

6. XIX Annual review meeting of NCRP-ICMR, Chennai, 11-14 November 2003

#### Binu V S

7. Two-day workshop on Research Methodology conducted by the P.S.G. Institute of Medical Science, Coimbatore.

## PUBLICATIONS, 2003-04

1. Aleyamma Mathew; Krishnan Nair, M.; Manoj Pandey; Shaji Thomas. 'Malignant tumours of the minor salivary glands: A survival analysis of 17 years from a tertiary referral cancer centre' *Journal of Postgraduate Medicine*. 49(1), 2003; 25-28
2. Aleyamma Mathew; Rajan, B; Manoj Pandey. 'Do younger women with non-metastatic and non-inflammatory breast carcinoma have poor prognosis?' *World Journal of Surgical Oncology*. 2(2), 2004;
3. Aleyamma Mathew; Rashmi Sinha; Burt, R; Cann, B; Paskett, E; Iber, E; Kikendall, W; Lance, P; Shike, M; Weissfeld, J. 'Meat intake and the recurrence of colorectal adenomas'. *European Journal of Cancer Prevention*. 13(3), 2004:159-64.
4. Aleyamma Mathew; Ulrike Peters; Nilanjan Chatterjee; Martin, Kuldorff, Rashmi Sinha. 'Fat, fiber, fruits, vegetables and risk of colorectal adenomas' *International Journal of Cancer*. 108(2), 2004: 287-92
5. Badaruddin Mirsa Hussain . 'Screening and early diagnosis of cancer'. *Kerala Medical Journal* .43(1), 2003 :8-9.
6. Beela Sarah Mathew; Grossman, Stuart A. 'Pneumocystis carinii pneumonia prophylaxis in HIV negative patients with primary CNS lymphoma' *Cancer Treatment Reviews*. 29(2), 2003: 105-119
7. Berlin Grace; Vemnica Shalini Jeyadoss; Sreelekha, TT; Niranjali Devaraj, S; Halagowder Devaraj. 'Co-overexpression of p53 and *bc1-2* proteins in HPV-induced squamous cell carcinoma of the uterine cervix' *Gynecologic Oncology*. 2003, 91: 51-58
8. Bhattathiri, VN. 'Cumulative interaction interval analysis of time and fraction size in radiotherapy' *Clinical Oncology*. 15(4), 2003: 394-99
9. Bijoy Cherian Thomas ; Manoj Pandey ; Ramdas, K ; Paul Sebastian ; Krishnan Nair, M. 'FACT-G: Reliability and validity of the malayalam translation' *Quality of Life Research*. 13, 2004: 263-69
10. Bijoy Cherian Thomas; Manoj Pandey; Parameswaran, S; Rajan, B; Krishnan Nair, M. 'Preliminary results of an ongoing study on quality of life in women with curable breast cancer'. *Psycho-Oncology* 12(4) Suppl, 2003: S157 (Abstract)
11. Bindu, L; Prabha Balaram; Aleyamma Mathew; Remani, P; Bhattathiri, VN; Krishnan Nair, M. 'Radiation-induced changes in oral carcinoma cells- a multiparametric evaluation' *Cytopathology*. 14(5), 2003 : 287-293
12. Bipin T Varghese; Anitha Mathews; Manoj Pandey; Pradeep, VM. 'Unusual metastasis of papillary thyroid carcinoma to larynx and hypopharynx : a case report' *World Journal of Surgical Oncology*. 1(7), 2003;
13. Bipin T Varghese; Paul Sebastian; Ramachandran, K; Manoj Pandey. 'Antinomycosis of the parotid masquerading as malignant neoplasm' *BMC Cancer*. 4(7), 2004
14. Bipin T Varghese; Ramdas, K ; Paul Sebastian; Krishnan Nair, M. 'Salvage chemotherapy and surgery for radio recurrent carcinoma glottis' *Indian Journal of Cancer*. 40 (3), 2003: 113-114
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16. ChandraMohan, K; Thara Somanathan; Kusumakumary, P; Balagopal, PG; Manoj Pandey. 'Metastatic Osteosarcoma causing intussusception' *Journal of Pediatric Surgery*. 38(10), 2003.
17. Gajalekshmi, V; Hung Rayjean, J; Aleyamma Mathew; Cherian Varghese; Brennan, Paul; Boffetta, Paolo. 'Tobacco smoking and chewing, alcohol drinking and lung cancer risk among men in Southern India' *International Journal of Cancer*. 107(3), 2003: 441-447
18. Geetha, BS; Latha, PG; Remani, P. 'Anti tumour effect of *Elophantopus scaber* Linn'. *Journal of Tropical Medicinal Plant*. 4(1), 2003: 75-79.

19. Geetha, N; Prakash, NP; Lali VS; Krishnan Nair, M. 'Osteosarcoma with calcified regional lymph node metastasis'. *Medical and Pediatric Oncology*. 419(4) 2003: 396 (Abstract)
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26. Manoj Pandey. 'Quality of life of patients with cancer in India: challenges and hurdles in putting theory into practice'. *Psycho-oncology* 12(4) Supl. 2003: S188 (Abstract)
27. Manoj Pandey. 'Chemoprevention of breast cancer'. *Indian Association of Surgical Oncology Newsletter*, 2003.
28. Manoj Pandey; Anitha Mathews; Elizabeth K.Abraham; Paul Sebastian; Iqbal Ahamed, M; Elizabeth Mathew Iype; Krishnan Nair, M. 'Squamous cell carcinoma in untreated psoriasis: a case report' *Journal of Indian Medical Association*. 102(1), 2004: 39-40
29. Manoj Pandey; Chandramohan, K. 'Epidermal growth factor receptors: a novel target for anti-cancer treatment'. *World Journal of Surgical Oncology*. 1(9), 2003.
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40. Rachel Cherian Koshy; Venugopal, A. 'Successful pain management of post herpetic ophthalmic neuralgia with regional nerve blocks: a case report' *Indian Journal of Anaesthesia*. 47(4), 2003: 304-05
41. Radhakrishna Pillai, M; Priya Chacko; Lekshmi Kesari, A; Jayaprakash, P G; Jayaram, HN; Antony, AC. 'Expression of folate receptors and heterogenous nuclear ribonucleoprotein E1 in women with human papillomavirus mediated transformation of cervical tissue to cancer' *Journal of Clinical Pathology*. 56, 2003: 569-74
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### Books/ Chapters in books/ Conference Papers

51. Manoj Pandey; Krishnan Nair, M; Paul Sebastian. 'Advances in Oncology' V.3. - New Delhi: Jaypee, 2004: 184 p.
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55. Manoj Pandey; Ramdas, K. 'Neoadjuvant therapy in rectal cancer'. In: Advances in Oncology Vol.3/ ed by Manoj Pandey...et al. New Delhi: Jaypee Brothers, 2004:139-147.
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66. Smitha, L S. *Momordica charantia* lectin binding to normal and neoplastic cervical epithelium. Proceedings of the 15th Kerala Science Congress, 2003 p.287-290
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68. Vinod Kumar, B. 'Molecular analysis of BRCA1 gene mutation and its prognostic significance in breast and/or ovarian cancer families in Kerala'. Proceedings of the 15th Kerala Science Congress, 2003 p.276-282

## Non-academic staff strength

### Administrative staff

Position	No.	Position	No.
Registrar	1	Telephone Operator cum	
Controller of Finance	1	Receptionist Gr.I	1
Administrative Officer	1	Clerk Gr. I	8
Administrative Officer (Clin. Ser.)	1	Clerk	1
Accounts Officer	1	Typist Gr. I	1
Asst. Public Relations Officer	1	Dark Room Asst.	1
Asst. Administrative Officer	1	Driver Gr.I	3
Asst. Accounts Officer	1	Driver Sr.Gr.	1
Asst. Purchase Officer	1	Senior Helper	20
Secretary to Director	1	Senior Animal Housekeeper	2
Asst. Internal Audit Officer	1	Despatcher	2
Junior Personal Assistant	5	Helper	2
Officer Asst. St. Gr.	3	Security Guard Gr.I	1
Office Assistant	2	Security Guard	17
Cashier Grade-I	2	Gardener	1
Cashier Cum Receptionist Gr.I	1	Coding Clerk	1

### Technical and Scientific Staff

Position	No.	Position	No.
CNO & Assoc. Prof. of Nursing	1	Nursing Supdt.	1
Scientific Officer Gr.I	1	Nursing Supervisor	2
Senior Scientific Asst.	1	Anaesthesiologist	1
Medical Records Officer	1	Resident Medical Officer	3
Cytotechnologist Sr.Gr.	3	Jr. Systems Analyst	1
Technical Officer	1	Library Assistant	2
Jr. Technical Officer	1	Lab Technician	1

Position	No.	Position	No.
Dietician Gr.I	1	RIA Technician Gr.I	3
Staff Nurse Gr.I	17	Protocol Nurse	1
Staff Nurse	131	Radiographer	2
Radiographer Sr.Gr.	23	Lab Technician Sr.Gr.	9
Senior Radiographer	1	Pharmacist Gr.I	1
Head Nurse Gr.I	1	Social Investigator Gr.I	2
Head Nurse	10	Mould Room Technician Sr.Gr.	1
Head nurse & Clinical Instructor	1	Anaesthesia Technician Gr.I	1
Cytotechnician Sr. Grade	2	Theatre Technician Gr.I	
Cytotechnologists	4	(Anaesthesia)	1
Sr. Lab Technician	1	Data Entry Operator Gr.I	3

### Engineering Staff

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

*Best Wishes*

**RCC BID FAREWELL TO THE FOLLOWING  
STAFF DURING 2003-2004**

1. Smt.Saraswathy Amma.E      Head Nurse
2. Sri.Madhavan Nair            Security guard
3. Shri.Thankappan Nair.R      Security guard

*RCC wish them a happy and prosperous life*

**ACCOUNTS  
2003-2004**

REGIONAL CANCER CENTRE SOCIETY  
BALANCE SHEET

PREVIOUS YEAR		SCH	LIABILITIES	CURRENT YEAR	
Rs	Ps			Rs	Ps
408,375,224.39		I	CAPITAL FUND	422,760,979.00	
2,510,413.12		II	SPECIFIC FUNDS	2,648,510.12	
5,690,943.00			UNUTILISED GRANTS	3,192,496.00	
1,383,021.95			STAFF WELFARE FUND	1,393,021.55	
68,685,267.10			CCL FUND	42,048,837.10	
506,117.00		III	AID RECEIVED FOR RESEARCH PROJECTS	506,117.00	
70,804,436.00		IV	SECURED LOANS	49,988,511.07	
			<u>CURRENT LIABILITIES AND PROVISIONS</u>		
12,190,844.07		V	CURRENT LIABILITIES-OTHERS	16,693,027.13	
28,023,825.40		VI	CREDITORS FOR GOODS SUPPLIED	29,208,556.40	
194,802,512.16		VII	PROVISION FOR DEPRECIATION	218,478,512.16	
780,481,510.09			<b>TOTAL</b>	784,923,073.82	

Place: Trivandrum  
Date: 30/07/2004

K. RADHAKRISHNAN NAIR  
CONTROLLER OF FINANCE

D. B. RAJAN  
DIRECTOR

TRIVANDRUM (Reg. No. 567/81)  
AS ON 31st MARCH 2004

PREVIOUS YEAR		SCH	ASSETS	CURRENT YEAR	
Rs	Ps			Rs	Ps
579,972,702.30		VII	FIXED ASSETS	396,366,458.00	
1,516,421.70			CAPITAL WORK IN PROGRESS		
51,354,856.00		VIII	INVESTMENTS	46,019,887.00	
			<u>CURRENT ASSETS AND LOANS AND ADVANCES</u>		
7,465,762.18		IX	CLOSING STOCK	11,298,251.29	
3,598,510.52		X	ADVANCES TO PROJECTS	2,395,571.37	
9,403,309.89		XI	ADVANCES - OTHERS	9,315,663.69	
			INTEREST ACCRUED BUT NOT DUE	4,613,522.00	
11,328,689.00		XII	INVESTIGATION FEES RECEIVABLE	11,390,741.00	
3,845,770.82		XIII	BALANCE WITH BANKS	321,206.02	
216,536.15		XIV	CASH IN HAND	121,521.39	
294,794,018.73		XV	INCOME & EXPENDITURE A/C	308,580,152.16	
		XVI	NOTES FORMING PART OF ACCOUNTS		
		XVII	SIGNIFICANT ACCOUNTING POLICIES		
780,481,510.09			<b>TOTAL</b>	784,923,073.82	

As per our report even date attached.

FOR VISHNU RAJENDRAN & CO.  
CHARTERED ACCOUNTANTS

M. P. JOSE FCA  
(Partner)  
MEMBERSHIP No. 204265

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

PREVIOUS YEAR	SCH	EXPENDITURE	CURRENT YEAR	
			Rs	Ps
7473781.27	A	Opening Stock	7455758.18	
45845415.26	A	Purchases	58850545.20	
88856699.33	B	Salaries and Allowances	84220186.39	
150737.00		Uniform and Liveries	102700.00	
280731.00	C	Rent, Rates & Taxes	447747.00	
868810.01	D	Postage, Telephone & Telegrams	835736.00	
802388.50	E	Travelling Expenses	597974.50	
1374010.35	F	Printing & Stationery	189529.70	
67315.00		Advertisement Charges	508270.00	
9974130.00	G	Electricity and Water Charges	16613330.05	
168300.00		Remuneration to Auditors	112600.00	
4326552.25	H	Repairs & Maintenance	3713332.57	
1305549.00	I	Service Contract Charges	1371055.00	
8915319.48		Interest & Bank Charges	5515782.48	
202483.00		Conferences/Seminars/Workshop	66680.00	
167616.00	J	Computer Expenses	160074.00	
4582.00		Books & Periodicals	23267.00	
800413.00		Bad Duktta written off	809013.00	
1209219.00		Expenses to NTR	1884015.05	
498328.94	K	Miscellaneous Expenses	289204.50	
19617060.00		Depreciation	19678100.00	
<b>192815451.33</b>	<b>TOTAL</b>		<b>211893209.42</b>	

**TRIVANDRUM (Reg. No. 567/81)  
FOR THE YEAR ENDED 31<sup>st</sup> MARCH 2004**

PREVIOUS YEAR	SCH	INCOME	CURRENT YEAR	
			Rs	Ps
38108985.00		Grant-in-aid; Govt of Kerala	47012912.30	
689157.00		Grant-in-aid; Govt of India	711178.00	
22150558.00		Investigation Fees	100110577.00	
32370164.00		Medicine Receipts	42505057.00	
306714.00		Interest Income	75116.00	
186904.00	L	Training Fees	88740.00	
780949.70	M	Miscellaneous Income	1189157.65	
84442.00		Profit on sale of Assets		
7455788.18		Closing Stock	11298251.29	
20225779.48		Excess of Expenditure over INCOME	9004240.18	
<b>192815451.36</b>	<b>TOTAL</b>		<b>211993209.42</b>	

As per our report even date attached

FOR MISHNU RAJENDRAN & CO.  
CHARTERED ACCOUNTANTS

M.P. JOSE FCA  
(Partner)  
MEMBERSHIP No. 204255

Place: Trivandrum  
Date: 30/07/2004

K. RADHAKRISHNAN NAIR  
CONTROLLER OF FINANCE

Dr. B. RAJAN  
DIRECTOR

REGIONAL CANCER CENTRE SOCIETY  
CANCER CARE  
INCOME AND EXPENDITURE ACCOUNT

EXPENDITURE	CURRENT YEAR	
	Rs	Ps
Salaries & Allowances	96000.00	
Advt. & Publicity	81100.00	
Reimbursement to Patients	5759272.00	
Printing and Stationery	12500.00	
Miscellaneous Expenses	2100.00	
Excess of Income Over Expenditure	218106.75	
<b>TOTAL</b>	<b>6149078.75</b>	

Place: Trivandrum  
Date: 30/07/2004

K. RADHAKRISHNAN NAIR  
CONTROLLER OF FINANCE

D. S. RAJAN  
DIRECTOR

TRIVANDRUM (Reg. No. 567/81)  
FOR LIFE SCHEME  
FOR THE YEAR ENDED 31<sup>st</sup> MARCH 2004

INCOME	CURRENT YEAR	
	Rs	Ps
Interest on FD & Investments	6149078.75	
<b>TOTAL</b>	<b>6149078.75</b>	

FOR VISHNU RAJENDRAN & CO.  
CHARTERED ACCOUNTANTS

M.P. JOSE FCA  
(Partner)  
MEMBERSHIP No. 204266

SCHEDULE  
REGIONAL CANCER CENTRE SOCIETY  
SCHEDULE OF FIXED ASSETS

GROSS BLOCK

ITEM	Cost on 1.4.03	Additions	Deduction	Cost on 31.3.2004
BUILDINGS, OLD	80050.25			85000.25
BUILDINGS	30023377.66			30023377.66
BUILDINGS, RT	17364630.70			17044000.70
BUILDINGS PHASE II	95053389.05	37417.00		01020500.05
BOUNDARY WALL	12703.59			12700.59
BUILDING - COBALT UNIT	975347.00			975347.00
COBALT UNIT	78091455.30			800430.30
BUILDING LINEAR ACCELERATOR		2293661.70		2293661.70
WATER SUPPLY AND DRAINAGE	274856.43			274856.43
FURNITURE AND FITTINGS	9531876.43	280383.00		9861262.43
OFFICE EQUIPMENTS	2547305.43	21255.00		2578560.43
HOSPITAL & LAB EQUIPMENTS	13331071.87	8502182.00		12203283.87
ELECTRICAL INSTALLATION	3703686.30	144708.00		37186392.30
FIRE DETECTION	384720.00			384720.00
AIR CONDITIONING	16655404.35			16655404.35
COMPUTER HARDWARE AND SOFTWARE	9155725.00	53483.00		9369218.00
GAS AND CYLINDER	893157.00			893157.00
VEHICLES	782531.60			782531.60
LIBRARY BOOKS AND JOURNALS	12708253.15	347061.00		16633343.15
LIFT AND ELEVATOR	5313240.00			5313240.00
ASSETS (DONATIONS)	537672.00			337672.00
TELEPHONE EQUIPMENTS	2835803.00	10300.00		2300108.00
LINEAR ACCELERATOR (WIP)		2200.00		2200.00
HOSPITAL EQUIPMENTS (PROJECT)		3010857.00		3010857.00
<b>TOTAL</b>	<b>378,872,702.30</b>	<b>18883755.70</b>	<b>0.00</b>	<b>206,688,468.00</b>

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TRIVANDRUM (Reg. No. 557/01)  
AS ON 31-03-2004

DEPRECIATION

NET BLOCK

Upto 31.3.03	Additions	Total upto 31.3.2004	As on 31.3.2004	As on 31.3.03
531478.43	17022.00	515409.43	340701.32	558633.82
14028151.83	843561.00	14901712.83	10077654.40	10871235.40
6777471.10	615891.50	7265322.10	993171.10	10375229.03
24651673.50	3320946.00	27922618.50	83007580.60	66331500.55
56226.14	2545.00	7071.14	55947.48	58082.48
95038.25	4403.00	139105.35	805267.85	860750.85
6120940.75	1945576.00	7066522.75	7024032.55	12870633.25
	114733.00	114733.00	2180478.70	
1147048.12	70131.00	1217177.12	337403.30	407340.30
5154243.72	471602.00	5603845.72	4244417.20	4427857.20
1520739.51	153741.00	1670680.51	3889712.92	1327015.92
75233539.05	7127020.00	82421471.83	49381782.12	83017583.12
26992764.77	1532914.00	28490678.77	8884614.83	12072720.83
3749792.00	100108.00	3849900.00	877823.84	1053327.84
13190668.54	554393.00	13745061.54	2973025.51	3408758.51
2386438.68	56037.00	2601566.68	127871.04	163225.04
4277038.30	290415.00	4867454.30	1845302.70	1938087.70
372139.37	78088.00	450227.37	315554.23	330442.23
8282685.48	1536685.50	7936394.48	8977933.40	6575667.60
4456925.87	218147.00	4675072.87	1238184.17	1464311.17
274500.00	9467.00	283967.00	93644.85	9361.85
2066784.84	121402.00	2213186.84	687542.36	756044.36
			1.00	2200.00
	451023.00	451023.00	2578224.00	
<b>103,802,512.18</b>	<b>18,878,130.60</b>	<b>218,478,812.18</b>	<b>177392845.84</b>	<b>178,179,190.14</b>



### AUDITOR'S REPORT

1. We have audited the attached Balance Sheet of the REGIONAL CANCER CENTRE SOCIETY, Regn. No. 567/81, Thiruvananthapuram as at 31<sup>st</sup> March 2004 and the Income and Expenditure Account for the year ended on that date, annexed thereto. These Financial Statements are the responsibility of the 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 the management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.
2. We have obtained all the informations and explanations, which to the best of our knowledge and belief were necessary for the purpose of our audit.
3. In our opinion, proper books of accounts have been kept by the Society so far as it appears from our examination of those books of accounts
4. The Balance Sheet, Income and Expenditure account and the schedules thereon are in agreement with the books of accounts maintained by the Society.

5. In our opinion and to the best of our information and according to the explanations given to us and subject to *schedule XVI notes forming part of the accounts and the facts that:*

- (i) *Specified funds amounting to Rs. 26,45,518.12 in Schedule II to the balance sheet and Rs. 606117 in Schedule III. Advances received for research projects are pending reconciliation, the impact of which is currently unascertainable.*
- (ii) *It is also reported that the balances of items classified under schedule VI, creditors for goods supplied Rs. 29208553.40 and Schedule X, Advance to projects Rs. 2395671.57 are subject to confirmation.*
- (iii) *the Internal Control systems are not commensurate with the size of the organization and the nature of its operations,*
  - a) We report that, the Balance Sheet read together with the schedules and notes thereon gives a true and fair view of the state of affairs of the Society as at 31.03.2004 and;
  - b) the Income and Expenditure Account read together with the schedules and notes thereon gives a true and fair view of the excess of expenditure over the income of the Society for the year ended 31.03.2004

FOR VISHNU RAJENDRAN & CO,  
CHARTERED ACCOUNTANTS

Thiruvananthapuram  
06.08.2004

M.P. JOSE FCA  
(Partner)  
MEMBERSHIP No. 204255

## SCHEDULE - XVI

### NOTES FORMING PART OF THE ACCOUNTS

1. Out of the grant received from Government of Kerala during the financial year 2003-2004 amounting to Rs 540.00 Lakhs, an amount of Rs. 69.97 lakhs have been transferred to Capital Fund representing Fixed Assets acquired or constructed during the year and balance of Rs.470.13 Lakhs have been treated as Revenue and taken to Income and Expenditure Account.
2. Claim made by Executive Engineer, Special Building ,PWD amounting to Rs.3,45,615/- and claim made by The Corporation of Trivandrum, vide their Lt.No.D.O No.R9-2362/94(69)Dt 13/07/2002 for a total amount of Rs.90,26,490/- towards the Property tax liability for the period up to 30/09/2002 are treated as contingent liability only.
3. A sum of Rs.8,09,013/- has been written off during the year being 1/5 of advances to projects Schedule X, which represents unmatched items during the previous years and to the extent, the excess of expenditure over income of the Society for the current year is over stated .
4. During the year ended March 31, 2004, RCC has extended help in the nature of subsidy to poor and needy patients to the extent of Rs. 799 Lakhs. As a result the income is under stated to that extent.
5. Specified funds amounting to Rs.26,45,518.12, classified under Schedule II to the Balance Sheet represents amounts received for specified purposes from different sources. However, expenses though incurred, against these funds during earlier years were not matched against these funds properly.
6. Bank interest accrued but not received during the year under Cancer Care for Life Scheme deposits includes interest to the extent of Rs. 18,48,400/- attributable to the previous years and so the current year income is over stated to that extent.
7. An amount of Rs.31,32,760 included in purchases relates to purchases made during the previous year from M/S.Board of Radiation & Isotopes which is accounted for during the year . The current year purchase is over stated to this extent.

8. Previous year figures have been re-grouped and re-cast wherever necessary to suit the current year's layout.
9. Out of CCL Fund and Income there from an amount of Rs.287.18 lakhs have been utilised for the development of infrastructural facilities.

K.Redhakrishnan Nair  
Controller of Finance  
Regional Cancer Centre  
Thiruvananthapuram

Dr.B.Rajan  
Director  
Regional Cancer Centre  
Thiruvananthapuram

For Vishnu Rajendran & Co.  
Chartered Accountants

M.P.Jose FCA  
(Partner)

## SCHEDULE - XVII

### SIGNIFICANT ACCOUNTING POLICIES

1. The Financial Statements are prepared on historic cost convention method.
2. Fixed Assets are accounted at cost. Depreciation is provided at the rates as fixed by the management and on written down value method. Full depreciation for the year is provided for in respect of additions irrespective of the time they are put to use during the previous year.
3. Chemicals, Medicines and Consumable stores are valued at cost on FIFO basis.
4. Grants from Governments are accounted for on the basis of the sanctions received.
5. Contributions in foreign currency are accounted on realization basis.
6. Provident fund is regularly contributed to the Employees Provident Fund and is deposited with Regional Employees Provident Fund Commissioner. Contributions towards gratuity is made through Group Gratuity Scheme of Life Insurance Corporation of India.

K.Redhakrishnan Nair  
Controller of Finance

Dr.B.Rajan  
Director

For Vishnu Rajendran & Co.  
Chartered Accountants

M.P.Jose FCA  
(Partner)

VISHNU RAJENDRAN & CO  
Chartered Accountants

Kalthayil Buildings, T. B. Road  
P.O. No. 227, Kottayam - 686 001  
E-mail: vrancoo@vanchar.net.in  
Ph: 0481 - 2581999, 2301995, 3106228

### UTILISATION CERTIFICATE

Certified that the grant of Rs 5,40,00,000/- (Rupees Five crores Fourty lakhs only) received during the financial year 2003-2004 by the REGIONAL CANCER CENTRE, THIRUVANANTHAPURAM (Registration No.567/81) from the Health and Family Welfare Department, Government of Kerala as per the Government Orders received have been utilized by the Society during the financial year 2003-2004 for the purpose of overall development and maintenance of the institution and other working expenses, implementation of projects, construction of building, functioning of Early Cancer Detection Centre and National Tumour Registry.

Thiruvananthapuram  
06/09/2004.

For Vishnu Rajendran & Co.  
Chartered Accountants

M.P. JOSE FCA  
(Partner)

VISHNU RAJENDRAN & CO  
Chartered Accountants

Kalthayil Buildings, T. B. Road  
P.O. No. 227, Kottayam - 686 001  
E-mail: vrancoo@vanchar.net.in  
Ph: 0481 - 2581999, 2301995, 3106228

### UTILISATION CERTIFICATE

Certified that an amount of Rs 99,91,453 (Rupees ninety nine lakhs ninety one thousand four hundred and fifty three only) has been utilized out of the following grants:-

Grant received during the financial year 2003-2004 from Health & Family Welfare Dept., Govt. of India, New Delhi.	Amount (Rs.) 75,00,000.00
Add:- Unutilised grant of the previous year	51,89,634.00
<b>TOTAL</b>	<b>1,26,89,634.00</b>
Amount set apart for Ultra Sound Scanner and advance paid for Linear Accelerator	26,48,181.00
Utilised Grant During 2003-2004	99,91,453.00
<b>TOTAL</b>	<b>1,26,89,634.00</b>

by the REGIONAL CANCER CENTRE SOCIETY, THIRUVANANTHAPURAM, during the year 2003-2004 for acquiring equipments and spare parts of equipments for the development of the Society.

For Vishnu Rajendran & Co.  
Chartered Accountants

Thiruvananthapuram  
06/08/2004.

M.P. JOSE FCA  
(Partner)

## ACKNOWLEDGEMENTS

Ministry of Health & Family Welfare, Government of India  
Department of Science and Technology, Government of India  
Department of Health & Family Welfare, Government of Kerala  
Department of Finance, 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 (IARC), Lyon, France  
Bhabha Atomic Research Centre, Bombay  
Director General of Health Services, Government of India, New Delhi  
Medical College, Trivandrum  
Sree Avittam Tirunal Hospital for Women and Children, Trivandrum  
Dental College, Trivandrum  
Sree Chitra Tirunal Institute of Medical Sciences & Technology,  
Trivandrum  
Kerala State Committee on Science, Technology and Environment,  
Trivandrum  
Director of Health Services, Government of Kerala, Trivandrum  
Atomic Energy Commission, Government of India  
Census Operations, Kerala  
Department of Economics and Statistics, Kerala  
University of Kerala  
Mahatma Gandhi University, Kerala  
Drugs Controller, Trivandrum  
College of Pharmaceutical Sciences, Trivandrum  
United Nations Fund for Population Activities  
C-DAC, Trivandrum  
Centre for Earth Science Studies, Trivandrum  
Indian Space Research Organisation  
University Grants Commission