

# HOSPITAL BASED CANCER REGISTRY

## Regional Cancer Centre, Thiruvananthapuram

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The Hospital Based Cancer Registry (HBCR) of the Regional Cancer Centre (RCC), Thiruvananthapuram started in 1982 under the network of Indian Council of Medical Research (ICMR). The RCC is an exclusive cancer specialty hospital established in 1981 and today caters to more than 14,000 new patients in Kerala, which is one third of the new cancer patient load in one calendar year in the State of Kerala (population in Kerala: approximately 31 million as on 2001 census of India). The RCC also caters to patients from the neighbouring state of Tamil Nadu and the neighbouring countries such as the Maldives (approximately 1,500 new cancer patients).

The data abstraction and entry for invasive cancers are done using an in-house developed web based software “rccintranet.org”. The demographic details are collected and entered into the computer at the time of new patient registration at RCC and transferred to the core-proforma of the National Cancer Registry Programme (NCRP) of ICMR. The data transfer avoids manual documentation of the first part (demographic details) of the ICMR core-proforma. The second part (diagnostic, treatment and follow-up details) is entered using the above software after retrieving case-sheets from the RCC medical records. All variables in the core-proforma except age and various dates are directly selected from a selection box in the hyper textmark up language (HTML) form. The selection box contains all the codes along with their descriptions for each variable. The selection box corresponding to the variables topography and morphology contains the third edition of international classification of diseases for oncology (ICD-O-3) and the latest edition of an International Classification of Diseases (ICD-10).

The database was subjected to a series of consistency checks (comparing the values of certain variables against others) to ensure that valid codes were entered using in-house software. The data was edited based on the error list of cases obtained using the above check program. After editing, the data was sent to the Coordinating Unit of the NCRP (ICMR), Bangalore in an electronic format and subjected again to various range, consistency, unlikely combinations and duplicate checks. Necessary corrections were done based on the error list of cases sent by the coordinating unit.

- Since its inception in 1982 (n=3696), the RCC has been recording increasing number of patients and in 2010 there were 13,049 patients (6379 males and 6670 females) which is 253% more than in 1982.
- Among 13,049 patients in 2010, 89.1% (n=11,627; 5794 males and 5833 females) of cases were invasive, 0.5% (n=61) were in-situ and 1.6% (n=205) were borderline malignancies. Date

of diagnosis was 2010 itself for 10,251 (88.2%) cases and the remaining cases had their date of diagnosis in the previous years. Average age at diagnosis of cancer cases was 53.5 years (SD: 18.0 years) in males and 49.7 years (SD: 16.7 years) in females.

- Among males, lung cancer (14.5%) was the leading site followed by cancer of the oral cavity (14.2%) and among females, cancer of the breast (29.8%) was the leading site followed by cancer of the thyroid (12.5%).
- Children (0-14 years) constituted 4.8% of all cancers. In children, leukemia (57.5% in males & 47.5% in females) was the predominant cancer in both genders. 10% of all cancers were in the age group 15-34 years. In this age group, the leading cancers were leukemia in males (24.2%) and thyroid cancer in females (37.8%). 61.4% of all cancers were in the age group 35-64 years. In this age group, the leading cancer sites were oral cavity in males (15.9%) and breast in females (36.3%). 24.0% of all cancers were in the age group 65+ years. In this age group, the leading cancer sites were lung in males (18.2%) and breast in females (22.4%).
- The proportion of tobacco related cancers (oral cavity, pharynx, oesophagus, larynx, lung and urinary bladder) relative to all cancers was 39.6% in males and 10.7% in females.
- Among the cancer cases (n=11,627), diagnosis by microscopic verification was available in 93.2% of males and 96.5% of females. Among the microscopically diagnosed cancer cases (n=11,032), histology from primary site was available for 70% in males and 77% in females.
- Among the cancer cases, 7799 (67%) cases reported at RCC for the first time without any cancer directed treatment and the remaining cases (n=3828) had undergone partial treatment elsewhere before registration at RCC.
- Among the previously untreated cases, 67.4% of males, 67% of females had disease extending or spreading beyond the primary site of cancer. Among the previously untreated patients (n=7799), intention to treat was radical for 65.4% of patients. Among the previously untreated patients (n=7799), 80% received complete cancer directed treatment and among the patients who received first treatment elsewhere (n=3828), 60% received rest of the cancer directed treatment at RCC.
- Chemotherapy alone or combination with other modalities was the predominant form of treatment among the previously untreated patients (46.8%), as well as among the patients who received first treatment elsewhere (33.9%). Radiotherapy alone or in combination with the other form of treatment was 38.7% among the previously untreated patients and 31.5% among the patients who received first treatment elsewhere.

### Other Ongoing Programmes Utilising HBCR Data

1. District Cancer Registry, Thiruvananthapuram
2. District Cancer Registry, Kollam
3. Patterns of Care and Survival of Head & Neck, Breast and Cervix Cancer

4. Cancer Control Programme, Thiruvananthapuram Corporation
5. Thiruvananthapuram Jilla Panchayat Cancer Control Programme
6. Case-control study of bladder & kidney cancers
7. Nutritional factors and risk of breast cancer: a case-control study

### **Indexed Publications Utilising Registry Data and Involved by the Registry Staff during the past 3 years**

1. Jayakrishnan R, Mathew A, Lekshmi K, Sebastian P, Finne P, Uutela A. Assessment of nicotine dependence among smokers in a selected rural population in Kerala, India. *Asian Pac J Cancer Prev.* 2012; 13(6):2663-7.
2. Balagopal PG, George NA, Venugopal A, Mathew A, Ahamed MI, Sebastian P. Tobacco related habits among first degree relatives of patients undergoing surgery for advanced head and neck malignancies in India. *Asian Pac J Cancer Prev.* 2012; 13(1):217-20.
3. Jayakrishnan R, Mathew A, Uutela A, Finne P. A community based smoking cessation intervention trial for rural Kerala, India. *Asian Pac J Cancer Prev.* 2011; 12(12):3191-5.
4. Nooyi SC, Murthy NS, Shivananjaiah S, Sreekantaiah P, Mathew A. Trends in rectal cancer incidence - Indian scenario. *Asian Pac J Cancer Prev.* 2011; 12(8):2001-6.
5. Ganesh B, Swaminathan R, Mathew A, Sankaranarayanan R, Hakama M. Loss-adjusted hospital and population-based survival of cancer patients. *IARC SciPubl*,2011; (162):15-21.
6. Mathew A, Daniel CR, Ferrucci LM, Seth T, Devesa SS, George PS, Shetty H, Devasenapathy N, Yurgalevitch S, Tanuja Rastogi, Prabhakaran D, Gupta PC, Chatterjee N, Rashmi Sinha. Assessment of follow-up and the completeness and accuracy of cancer case ascertainment in three areas of India. *Cancer Epidemiol.* 2011 Aug; 35(4):334-41.
7. Sinha R, Daniel CR, Devasenapathy N, Shetty H, Yurgalevitch S, Ferrucci LM, George PS, Morrissey KG, Ramakrishnan L, Graubard BI, Kapur K, Reddy KS, McAdams MJ, Rastogi T, Chatterjee N, Gupta PC, Wacholder S, Prabhakaran D, Mathew A. Multi-center feasibility study evaluating recruitment, variability in risk factors and biomarkers for a diet and cancer cohort in India. *BMC Public Health.* 2011 May 27; 11:405.
8. Nair M, Prabhakaran D, Narayan KM, Sinha R, Lakshmy R, Devasenapathy N, Daniel CR, Gupta R, George PS, Mathew A, Tandon N, Reddy KS. HbA(1c) values for defining diabetes and impaired fasting glucose in Asian Indians. *Prim Care Diabetes.* 2011 Jul; 5(2):95-102.
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11. Ferrucci LM, Daniel CR, Kapur K, Chadha P, Shetty H, Graubard BI, George PS, Osborne W, Yurgalevitch S, Devasenapathy N, Chatterjee N, Prabhakaran D, Gupta PC, Mathew A, Sinha R. Measurement of spices and seasonings in India: opportunities for cancer epidemiology and prevention. *Asian Pac J Cancer Prev*. 2010; 11(6):1621-9.
12. Murthy NS, Shalini S, Sastry NB, Suman G, Sreekantaiah P, Mathew A. Increase in incidence of cancer of corpus uteri: estimation of time trends - an Indian scenario. *Eur J Cancer Prev*. 2011 Jan; 20(1):25-32.
13. Murthy NS, Rajaram D, Gautham MS, Shivraj NS, Pruthvish S, George PS, Mathew A. Trends in Incidence of Gall bladder Cancer – Indian Scenario. *Gastrointestinal Cancer: Targets and Therapy* (2011): 11-9.
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19. Shakeel MK, George PS, Josna Jose, Jesna Jose and Mathew A. Pesticides and breast cancer risk: a comparison between developed and developing countries. *Asian Pacific J Cancer Prev* 2010/11: 173-180.
20. Thomas M, George NA, Gowri BP, George PS, Sebastian P. Comparative evaluation of ASA classification and ACE-27 index as morbidity scoring systems in oncosurgeries. *Indian J Anaesthesia* 2010/54: 219-25.
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25. Mathew A and George PS. Trends in incidence and mortality rates of squamous cell and adenocarcinoma of cervix – worldwide. *Asia Pacific Journal of Cancer Prevention*. 2009/10:645-650.
26. Mathew A, George PS, Ildaphonse G. Obesity and kidney cancer risk in women– a systematic review and meta-analysis (1992-2008). *Asia Pacific Journal of Cancer Prevention*. 2009/10: 471-478.
27. Varghese BT, Sebastian P, Mathew A. Treatment outcome in patients undergoing surgery for carcinoma larynx and hypopharynx – A follow-up study. *Acta Oto-Laryngologica*. 2009/129: 1480-1485.
28. Dey S, Boffetta P, Mathews A, Brennan P, Soliman A, Mathew A. Risk factors according to estrogen receptor status of breast cancer patients in Trivandrum, South India. *Int J Cancer*. 2009/125; 1663-1670.
29. Gajalakshmi V, Mathew A, Brennan B, Rajan B, Kanimozhi V, Rai RR, Mathews A, Mathew BS, Boffetta P. Breastfeeding and breast cancer risk in India: a multicenter case-control study. *Int J Cancer* 2009/125; 662-665.
30. Rema PN, Suchetha S, Mathew AP, Mathew A, Sebastian P. Secondary cytoreduction in epithelial ovarian cancer recurrence: a perspective from a regional cancer center in India. *J Reprod Med*. 2009/54(8):506-10.

#### List of Other Staff Working for the Registry

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