

CANCER RESEARCH IN INDIA AND POSSIBLE AREAS OF COLLABORATION

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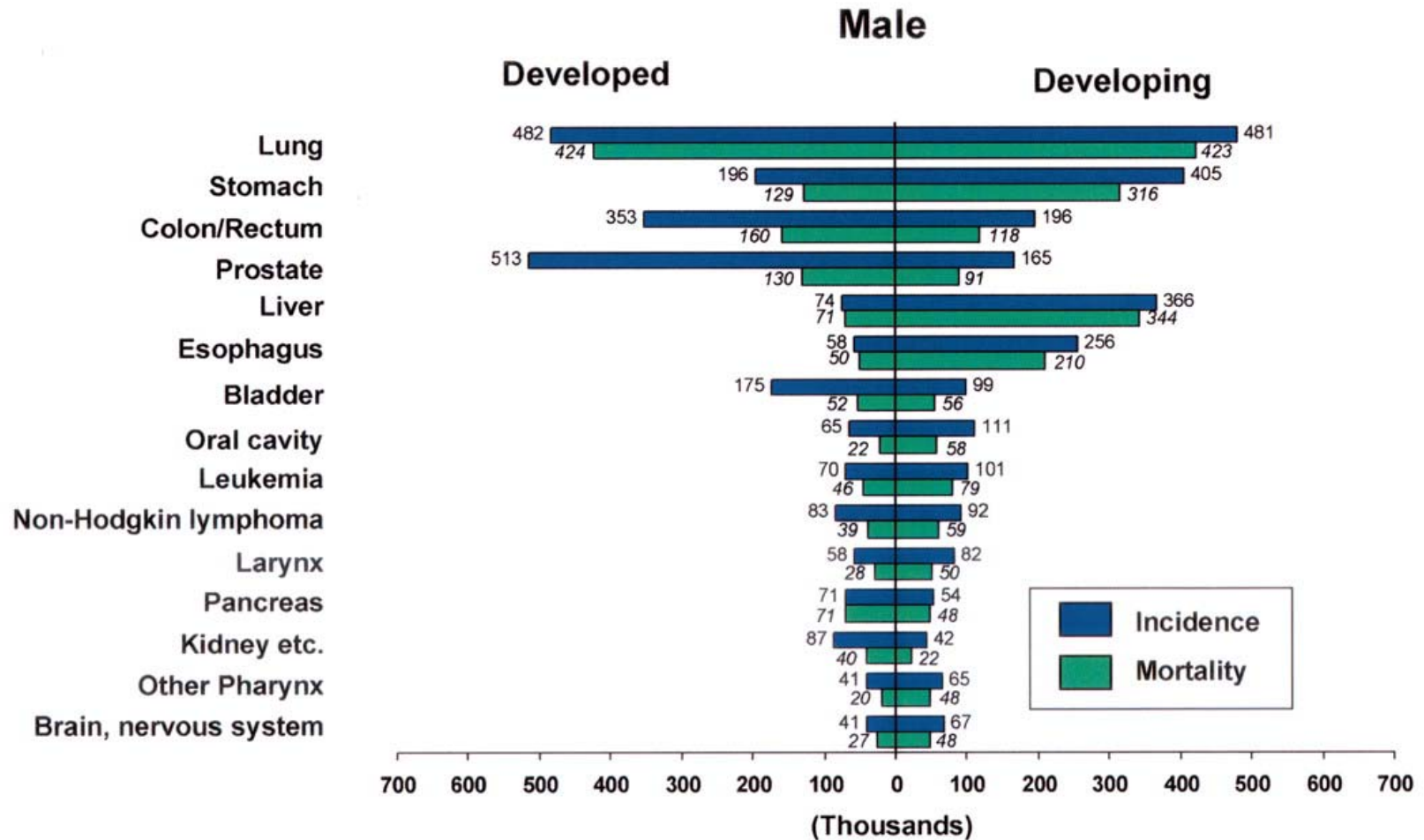
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INDIAN SCENARIO

- ❖ **Cancer is the cause of 12% of all deaths**
- ❖ **In India 2.5 – 3 million estimated cancer cases at any point of time**
- ❖ **Every year 1 million new cases are detected in India**
- ❖ **Every year 0.6 million cancer patients die in our country**
- ❖ **About 40% of the cancer are Tobacco related cancer**
- ❖ **70 – 80 % cancer cases are detected at late stage when treatment is not possible**

GLOBAL CANCER INCIDENCE IN DEVELOPING & DEVELOPED COUNTRIES



New Cancer Cases (Incidence) and Deaths (Mortality) in 2002

Data shown in thousands for developing and developed countries by cancer site and sex

Global Cancer Statistics, 2002, Parkin et al

Major Cancers Specific to India

- **Head & Neck Cancer**
- **Cancer of Buccal Mucosa**
- **Cervical Cancer**
- **Gall Bladder Cancer**
- **Liver Cancer**
- **Esophageal Cancer**
- **Stomach Cancer**
- **Lung Cancer**

Cancers that are on rise in India

(because of Western life style, food habits)

- Breast Cancer
- Colon Cancer
- Prostate Cancer

NATIONAL CANCER REGISTRY PROGRAMME

(Indian Council of Medical Research)



ICMR CANCER Registries

1. Population-based cancer registry = 13
2. Hospital-based cancer registry = 05

Non-ICMR CANCER Registries

1. Population-based cancer registry = 06

Leading Cancer sites in Population Based Registries in India



Cancer Diagnosis & Treatment facility in India.

- Radiotherapy and surgery are the mainstay of treatment for epithelial cancer.
- Chemotherapy is for leukemias and other cancers.
- About 100 cancer diagnosis and treatment centres in India.
- Total Radiation therapy centres = 170.
- Regional Cancer Centres in India = 25 + 10*.
- Government medical college hospitals with oncology wing = 50.
- District Hospitals with cancer treatment facility = 28.
- Private Hospitals and NGO's.

- Cancer Hospital & Research Centers in India are providing mainly treatment facilities but not research activity.
- Mainly Corporate sectors and particularly Dabur, Ranbaxy, Reddy's and other govt. biomedical Institutes are engaged in cancer research and developing new cancer drugs including cancer vaccines.
- Recently modern drug delivery system using Nanoparticles and cancer stem cells are also being developed.

Almost all modern aspects of cancer research are being carried out involving

- Clinico-epidemiological Research
- Cancer genetics and cytogenetics
- Genomics & Proteomics
- Pharmacogenomics
- Translational Research
- Gene Therapy
- Cancer Stem Cells
- Cancer Vaccines
- Molecular markers of cancer
- Immunology
- Signal Transduction & gene expression
- Nano Biology
- Bioinformatics and drug designing
- Cancer Diagnostics & Devices

Major Cancer Research Institutes

- Tata Memorial Hospital
- Post Graduate Institute of Medical Education and Research, Chandigarh
- Chittaranjan National Cancer Institute,
- [Christian Medical College Hospital, Vellore](#)
- Kidwai Memorial Institute of Oncology
- Indian Rotary Cancer Institute, (A.I.I.M.S)
- Dr. Bhubaneshwar Borooah (B.B.) Cancer Institute
- Gujarat Cancer Research Institute
- Cancer Institute (W.I.A.), Chennai
- Rajiv Gandhi Cancer Institute & Research Centre, Delhi
- Institute of Nuclear Medicine and Allied Sciences, New Delhi
- Regional Cancer Centre, Trivandrum
- Institute of Cytology & Preventive Oncology
- Institute of Pathology
- NCCS, Pune
- CCMB
- National Institute of Immunology
- JNU
- Indian Institute of Sciences
- NCBS
- Rajiv Gandhi Centre for Biotechnology, Trivandrum
- JNCASR, Bangalore
- Cancer Centre & Welfare Home Thakurpur
- Jawaharlal Nehru Cancer Hospital & Research Institute
- Cancer Hospital & Research Institute, Gwalior
- Dharmashila Cancer Foundation & research Centre
- Amla Cancer Hospital & Research Centre, Trichur

At ICPO

- Mainly working on **Cervical**, **Breast** and **Oral** cancer; clinicoepidemiological and molecular biological research.
- Transcriptional control of HPV oncogene expression.
- HPV DNA Vaccine.
- Molecular characterization of anti cancer herbal drugs and their clinical trials; **Praneem**/**Basant**/**Curcumin**.
- Transcriptional profiling of genes involved in cervical, oral and breast cancer.

Contd.....

- Development of novel & cost-effective early diagnostic techniques including silicon chip based STD & HPV microchip.
- Tobacco and pesticide induced cancers highly prevalent in north-east region of India.
- Identification and characterization of novel breast cancer gene mutations.
- Cancer and precancerous stem cells and their relation with recurrence and drug resistance.

Cancer Research Activity at other ICMR institutes.

- **Cancer Genomics and Proteomics.**
- **Occupational health and cancer.**
- **Nutrition and cancer.**
- **Cancer biomarkers.**

ICMR Institutes engaged in Cancer Research

- Institute of Cytology & Preventive Oncology (ICPO), Noida
- Institute of Pathology (IOP), New Delhi.
- National Institute of Nutrition (NIN), Hyderabad.
- National Institute of Occupational Health (NIOH), Ahmedabad.
- National Institute of Virology (NIV), Pune.

Important Area of Collaboration

- **Understanding molecular mechanism of Carcinogenesis**
- **Translational research**
- **Cancer Vaccine**
- **Cancer Stem cells**
- **Nano-biotechnology in cancer**
- **Tumor immunology**
- **Tumor molecular marker**
- **Preventive Oncology**
- **Drug Discovery**
- **Development of Herbal Drugs**
- **Molecular Epidemiology**

Important Area of Collaboration

Development of Technology/Research tools/Training

- **Generation of knockouts.**
- **Development of Transgenics.**
- **Vaccine constructs and expression vectors.**
- **Development of pseudovirions/virus like particles (VLPs).**
- **BSL 4 lab training.**

Thanks