

CANCER AWARENESS

Cancer is group of diseases characterized by purposeless, uncontrolled proliferation of cells. Cancer can occur in all living cells in the body and different cancer types have different natural history.

Three basic forms of cancer based on the part of the body that is affected: sarcomas (bone or soft tissue), carcinomas (surface tissue, such as lung, breast, colon), and leukemias or lymphomas (bone marrow or lymph nodes). Several factors, such as the type of cancer, the disease stage, whether there is any spread (or metastases), and physical effects (e.g., disfigurement, sexual functioning) influence how someone reacts and adjusts to the diagnosis of cancer

Recent times have seen an increase in cancer Incidence. Mainly attributed to urbanization, industrialization, lifestyle changes, population growth and increased life span (in turn leading to an increase in the elderly population). In India, the life expectancy at birth has steadily risen from 45 years in 1971 to 62 years in 1991, indicating a shift in the demographic profile.¹ It is estimated that life expectancy of the Indian population will increase to 70 years by 2021–25.² This has caused a paradigm shift in the disease pattern from communicable diseases to non-communicable diseases like cancer, diabetes and hypertension.

Distribution of Various types Cancers across the Indian Subcontinent

Among men, lung, esophagus, stomach, oral and pharyngeal cancers are more prevalent, while in women, cancers of cervix and breast are most common, followed by those of stomach and esophagus.

Different cancers occur in different states of our country.

- Esophageal cancers: Southern states of India like Karnataka and Tamil Nadu and also in Maharashtra and Gujarat.
- Stomach cancers: Southern India with the highest incidence in Chennai.
- Oral cancers: Kerala (South India)
- Pharyngeal cancers: Mumbai (Western India)
- Thyroid cancers among women: Kerala
- Gall bladder cancer: Northern India, particularly in Delhi and West Bengal.

Seven warning signs for Cancer:

- Unusual bleeding/discharge: Blood in urine or stool. Discharge from any parts of your body, for example nipples, penis, etc.
- A sore which does not heal: Don't seem to be getting better over time. are getting bigger or getting more painful or are starting to bleed

- Change in bowel or bladder habits: Changes in the color, consistency, size, or shape of stools. (diarrhea, constipated), Blood present in urine or stool
- Lump in breast or other part of the body: Any lump found in the breast when doing a self examination. Any lump in the scrotum when doing a self exam. Other lumps found on the body.
- Nagging cough: Change in voice/hoarseness, cough that does not go away or Sputum with blood
- Obvious change in moles: Asymmetry: Difference in appearance of the moles, the borders, colour and Diameter
- Difficulty in swallowing: Feeling of pressure in throat or chest which makes swallowing uncomfortable, feeling full without food or with a small amount of food
 - The American Cancer Society uses the word **C-A-U-T-I-O-N** to help recognize the seven early signs of cancer:
 - **C**hange in bowel or bladder habits
 - **A** sore that does not heal
 - **U**nusual bleeding or discharge
 - **T**hickening or lump in the breast, testicles, or elsewhere
 - **I**ndigestion or difficulty swallowing
 - **O**bvious change in the size, color, shape, or thickness of a wart, mole, or mouth sore
 - **N**agging cough or hoarseness

Cancer Treatment

Cancer treatment depends on the type of cancer, the stage of the cancer (its spread), age, health status, and additional personal characteristics. There is no single treatment for cancer, and patients often receive a combination of therapies and palliative care. Cancer treatment generally includes surgery, chemotherapy, radiation therapy, clinical trials, proton therapy, Immunotherapy, Gene therapy, complementary medicine, and cutting edge technologies.

Early detection of cancer can greatly improve the odds of successful treatment and survival.

Molecular diagnostics, biopsies, and imaging techniques are all used together to diagnose cancer.

Physicians use information from symptoms and several other procedures to diagnose cancer. Imaging techniques such as Biopsy, Molecular diagnostic tests, X-rays, CT scans, MRI scans, PET scans, endoscopy and ultrasound scans are used regularly in order to detect where a tumor is located and what organs may be affected by it.

Some of the cancer syndromes & cancer associated Risks

BRCA1 and BRCA2	Breast cancer, ovarian cancer, pancreatic cancer, prostate cancer
Hereditary Non-polyposis Colorectal Cancer	Colon cancer, endometrial cancer, ovarian cancer, gastric cancer, small bowel cancer, kidney/urinary tract cancer, biliary tract cancer, gallbladder cancer, CNS cancer
Familial Adenomatous Polyposis	Colon cancer, CNS cancer, thyroid cancer, hepatoblastoma
Multiple Endocrine Neoplasias (MEN)	Parathyroid cancer, pituitary cancer, thyroid cancer, pheochromocytoma
Familial Medullary Thyroid Carcinoma (FMTC)	Medullary thyroid cancer
Familial Malignant Melanoma	Melanoma, pancreatic cancer, breast cancer
Prostate Cancer	Prostate cancer
Familial Lymphoma and Leukemia	Lymphoma and leukemia
Li-Fraumeni	Osteosarcoma, brain tumours, breast cancer, adrenal cortical tumours, lung cancer, leukemia, soft tissue sarcoma, pancreatic cancer, colon cancer, melanoma
von Hippel Lindau (VHL)	Clear cell renal carcinoma, pheochromocytoma, retinal and CNS hemangioblastomas
Retinoblastoma	Unilateral and bilateral retinoblastoma, pineal gland tumours
Hereditary Diffuse Gastric Cancer	Diffuse gastric cancer, lobular breast cancer

Lifestyle related tips that can cut down risk of cancer –

1. Exercise regularly
2. Avoid sugary drinks and limit use of calorie high foods (especially those low in fiber and high in sugars/fats)
3. Eat more vegetables, fruits, beans, legumes and whole grains
4. Limit the alcohol intake
5. Limit the consumption of red meat and processed meat
6. Limit consumption of salty foods and foods processed with salt
7. Mothers should exclusively breast feed their babies for six months and then add other liquids and foods and continue to breast feed for at least one year.
8. Tobacco cessation

Cancer & Women Health

According to a study by the World Health Organization, one in 12 women in urban India will develop cancer in their lifetime. Approximately 40 per cent of new cases of cancer in India afflict women. In the Indian female the first most common cancer is cervical cancer which is followed by breast cancer and the third most common cancer is ovarian cancer. India has the highest rate of cervical cancer in the world. In the past decade, breast cancer has overtaken cervical cancer as the most common cancer among women in Indian cities such as Mumbai and Delhi. One in every 10 cancer deaths worldwide is in urban India. What's more alarming, 75-80 per cent of patients are in advanced stages of the disease at the time of diagnosis. The cancers that most often affect women are breast, cervical, oral, ovarian, endometrial, lung and colon.

Increasing incidence of cancer in Indian females can be attributed to our changing lifestyle, urbanization, late marriages, increased age at first childbirth, shorter duration of breast feeding etc. In addition to this sometimes cancer can be due to our genetic make up or inherited which contributes to roughly 10% of all cancers clinically seen.

Cancer Screening Tests for Women

Getting Recommended Screenings Can Help Catch Cancer Early

Screening tests are a vital part of your health care. They can often catch cancer in its earliest stages, long before any actual symptoms may be noticed.

There are particular cancer screening tests that are important for women. Each are highly effective and recommended for all females, although some tests are only performed at certain ages.

1. Pap smear for Cervical Cancer

A Pap smear is a highly effective test that screens for cervical cancer in women. The test involves the collecting of cells from the cervix to be examined under a microscope. It is not a diagnostic test, however. That means that if any abnormalities are discovered, more testing will be needed to make a formal diagnosis.

2. Pelvic exam for Gynecologic Cancers

A regular pelvic exam is necessary for all women. A pelvic exam is one of the first steps in diagnosing several conditions such as gynecologic cancers and sexually transmitted diseases. How often a woman needs a pelvic exam varies depending on her risk factors for certain conditions and previous exam findings. A pelvic exam is often accompanied by the Pap smear.

3. Mammogram for Breast Cancer

Women who are over 40 or at high risk for developing breast cancer need to have a regular mammogram. A screening mammogram is able to detect breast abnormalities that could signal breast cancer. Aside from regular mammograms, women of all ages should perform monthly breast self exams to check for abnormalities.

Cancer prevention tips in women

There are many things that women can do to prevent cancer! Reducing your risk of cancer is easier than you think. Simply changing some lifestyle habits can go a long way in preventing many types of cancer.

1. Avoid Smoking and Secondhand Smoke

We hear a dozen times a day how bad cigarettes are for us and the risk of lung cancer they pose. Why? Smoking is the most significant risk factor for cancer that we can reduce. Did you know that smoking increases your risk factor for developing dozens of types of cancer?

2. Practice Safe Sex

Having unprotected sex with many partners raises your risk for contracting a virus called the human papillomavirus, or HPV for short. Certain strains of HPV have been linked to several different types of cancers, mainly cervical cancer.

3. Get Regular Pap Smears

Getting a regular Pap smear can detect changes in the cervix before they become cancerous. A regular Pap smear is one of the best tools a woman has to prevent cervical cancer.

4. Pass on that Last Call for Alcohol

Studies have determined that women who drink alcoholic beverages develop cancer at a higher rate. Cut your alcohol intake.

5. Get Moving

Did you know that when you are exercising, you are reducing your risk for many types of cancer? The American Cancer Society recommends exercising 30 or more minutes, at least 5 days a week.

6. Eat a Low-Fat, Sensible Diet

Eating a diet low in animal fats has been shown to reduce the risk of many types of cancer. It also curbs obesity, which is a risk factor for many types of cancer. Maintaining a healthy weight is essential.

7. Be Sun Savvy

Using sunscreen properly and staying out of the sun during peak hours is essential to preventing skin cancer.

8. Know Your Family History of Cancer

Knowing your family history of cancer is very important to properly assess your risk factor for certain types of cancer. We know that cancers like breast, colon, ovarian, and possibly other types can be hereditary. If you know that a certain type of cancer runs in your family, let your doctor know. Together, you can determine a proper screening plan and assess your true risk. Genetic testing and counseling may be appropriate for some individuals.

Recent Advances in Clinical Management of Cancer

Conventional treatment modalities for cancer like surgery, chemotherapy and radiation therapy have reasonably reduced mortality rates. But conventional therapies have a narrow therapeutic index and the occurrence of drug resistance limit anticancer efficacy. Novel cytotoxic agents have brought certain advantages over the conventional ones, but sometimes, the disease is not responsive to curative treatment and anti-cancer strategies also results in deterioration of quality of life.

The advances in understanding the biology of cancer cells and their metabolic functioning have led to recognition of several molecules and processes that have been explored as potential targets for cancer directed therapy. Thus the targeted therapy was explored. These include monoclonal antibodies and small molecule inhibitors (proteasome, tyrosine kinases, farnesyltransferase, epigenetic, etc). Still cytotoxic chemotherapy remains the treatment of choice for many malignancies but targeted therapies are now a component of treatment for many types of cancer, including breast, colorectal, lung, and pancreatic cancers, as well as lymphoma, leukemia, and multiple myeloma.

The accumulating knowledge of human genomic variation has led to development of personalized medicine. This has helped in decreasing the adverse drug reactions and increasing the efficacy of drug treatment.

Pharmacogenomic research has been done providing a better understanding of the genetic bases for interindividual differences. It has the potential to significantly enhance the efficacy of chemotherapeutic agents and to the optimization of dosing regimens for individual cancer patients. Large and prospectively designed clinical trials will be necessary to assess the impact and cost effectiveness of pretreatment genotyping approaches.

The challenges encountered by current cancer therapies are Nonspecific systemic distribution of antitumor agents, inadequate drug concentrations reaching the tumor, and the limited ability to monitor therapeutic responses. Poor drug delivery to the target site leads to significant complications, such as multidrug resistance. Greater targeting selectivity and better delivery efficiency are the 2 major goals in the development of therapeutic agents or imaging contrast formulations.

Individualized therapy for cancer leads to development of multifunctional nanoparticles. Additional therapy improvement by active immunization inducing

antitumor immune responses by cancer vaccines is developed. This approach leads to the establishment of immune memory, thereby preventing tumor recurrence

The discovery and development of new targets and new molecular targeted drugs is a result of improvements in the knowledge of molecular biology, and crosstalk's from bench to bedside and from bedside to bench are essential tasks for this progress.

Cancer Control in India

India is one of the first few developing countries where a nation-wide cancer control programs were launched. Government of India took its first initiative in 1971. The National Cancer Control Program for India was formulated in 1984 with four major goals 13:

1. Primary prevention of tobacco related cancer
2. Early detection of the cancers of easily accessible sites
3. Augmentation of treatment facilities
4. Establishment of equitable, pain control and palliative care network throughout the country

Cancer Prevention: 7 steps to help recognize the early signs of cancer:

Change in bowel or bladder habits

A sore that does not heal

Unusual bleeding or discharge

Thickening or lump in the breast, testicles, or elsewhere

Indigestion or difficulty swallowing

Obvious change in the size, color, shape, or thickness of a wart, mole, or mouth sore

Nagging cough or hoarseness

Early detection of cancer remains the key for cancer cure, so in addition to lifestyle interventions, regular visits for cancer screening can help detect cancer at an early stage and thus increasing the chances for cure.

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