

Neoplasia III: Cancer Epidemiology

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Neoplasia Outline

- Tumor nomenclature
- Tumor characteristics
- Epidemiology
- Cancer pathogenesis

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- Epidemiology
 - Cancer incidence
 - Environmental variables
 - Age
 - Heredity

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Cancer Incidence

- Roughly 1.5 million new cases of cancer every year
- >500,000 deaths from cancer every year
- Cancer is 2nd leading cause of death (after heart disease)
- Most common cancers
 - Men: Prostate
 - Women: Breast
- Deadliest cancers
 - Men: Lung
 - Women: Lung

Recent Changes in Death Rates

Decreased death rates:

- Cervical cancer (pap smears)
- Colon cancer (earlier detection)
- Breast cancer (earlier detection)
- Lung cancer in men (less smokers)
- Some types of leukemia (new treatment)

Increased death rates:

- Lung cancer in women (more smokers)

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Some Stats

- Breast cancer death rate in US is 5x that in Japan!
- Stomach cancer death rate in Japan is 7x that in US!
- Liver cancer infrequent in US, common in Africa.
- Probably due to environmental (not hereditary) factors.
- Most sporadic cancers are caused by environmental factors.

Environmental Carcinogens

- Sunlight: skin cancer
- Smoking: lung cancer
- Alcohol: liver, breast cancers
- HPV: cervical carcinoma

Occupational carcinogens

Asbestos	roofing, tiles	mesothelioma
Benzene	light oil, solvents	leukemia
Beryllium	missile fuel	lung cancer
Ethylene oxide	ripening agents, fumigants	leukemia
Radon	uranium decay, mines	lung cancer
Vinyl chloride	refrigerants	angiosarcoma and liver cancer
Nickel	welding, ceramics	nose and liver cancers
Cadmium	batteries	prostate cancer

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Age

- Cancer is more frequent at the two extremes of age.
- Elderly
 - Frequency of cancer increases with age
 - Most cancer deaths occur between 55-75
- Children
 - 10% of all childhood deaths
 - Leukemia/lymphoma, CNS tumors, sarcoma

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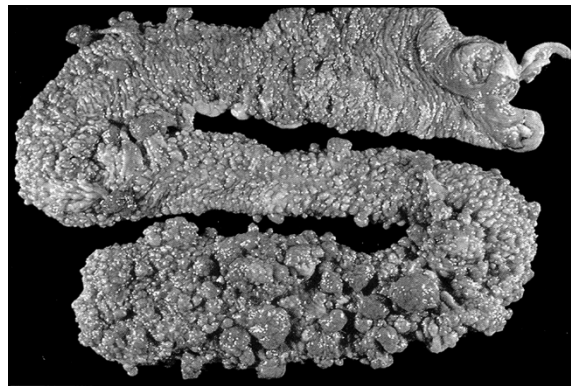
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Three Types of Hereditary Cancer

- Inherited cancer syndromes
- Familial cancers
- Syndromes of defective DNA repair

Three Types of Hereditary Cancer

- Inherited cancer syndromes
 - Dominantly inherited
 - Retinoblastoma
 - Familial polyposis coli



Familial polyposis coli

Three Types of Hereditary Cancer

- Inherited cancer syndromes
- Familial cancers
 - Most common sporadic cancers have familial forms too
 - Breast, colon, ovary, brain
 - Occur earlier, are often deadlier

Three Types of Hereditary Cancer

- Inherited cancer syndromes
- Familial cancers
- Syndromes of defective DNA repair
 - Recessively inherited
 - Xeroderma pigmentosum

