

Incidence & Distribution of Cancer in
Humans
Incidence & Mortality Rates

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Cancer is the second overall leading cause of death (after ischemic heart disease) in the United States:

- Approx. 500,000 deaths annually (25% of all deaths).
- The incidence **continues to rise**, probably reflecting the **increasing average age of the population**.
- **Epidemiologic study of cancer distribution** often sheds light on the etiologic factors.
- Thorough knowledge of the incidence and pattern of cancer in the **local population** is important for the clinician evaluating the possibility of cancer in a given patient.

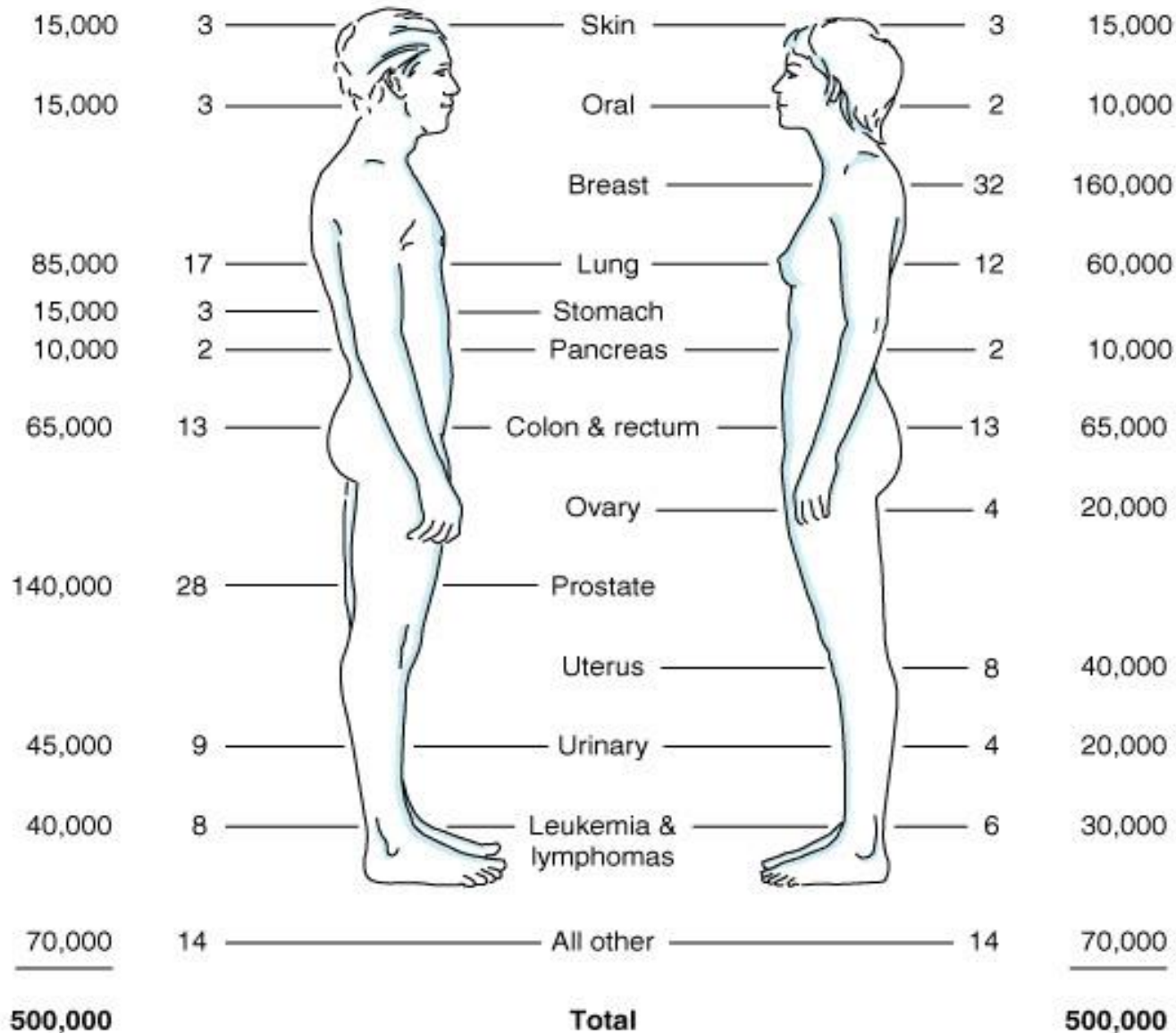
Both the **incidence** and the **death rate** of cancer must be considered

- The latter reflects both the **incidence and the success of diagnosis and therapy**.
- For instance, skin cancer is by far the most common cancer in the United States (> 500,000 cases per year)
- but is usually **diagnosed early and cured by excision**;
- the death rate from skin cancer is thus **low and does not figure prominently in the overall cancer death rate statistics**.

Male	
Total number	Percentage of total

Female	
Percentage of total	Total number

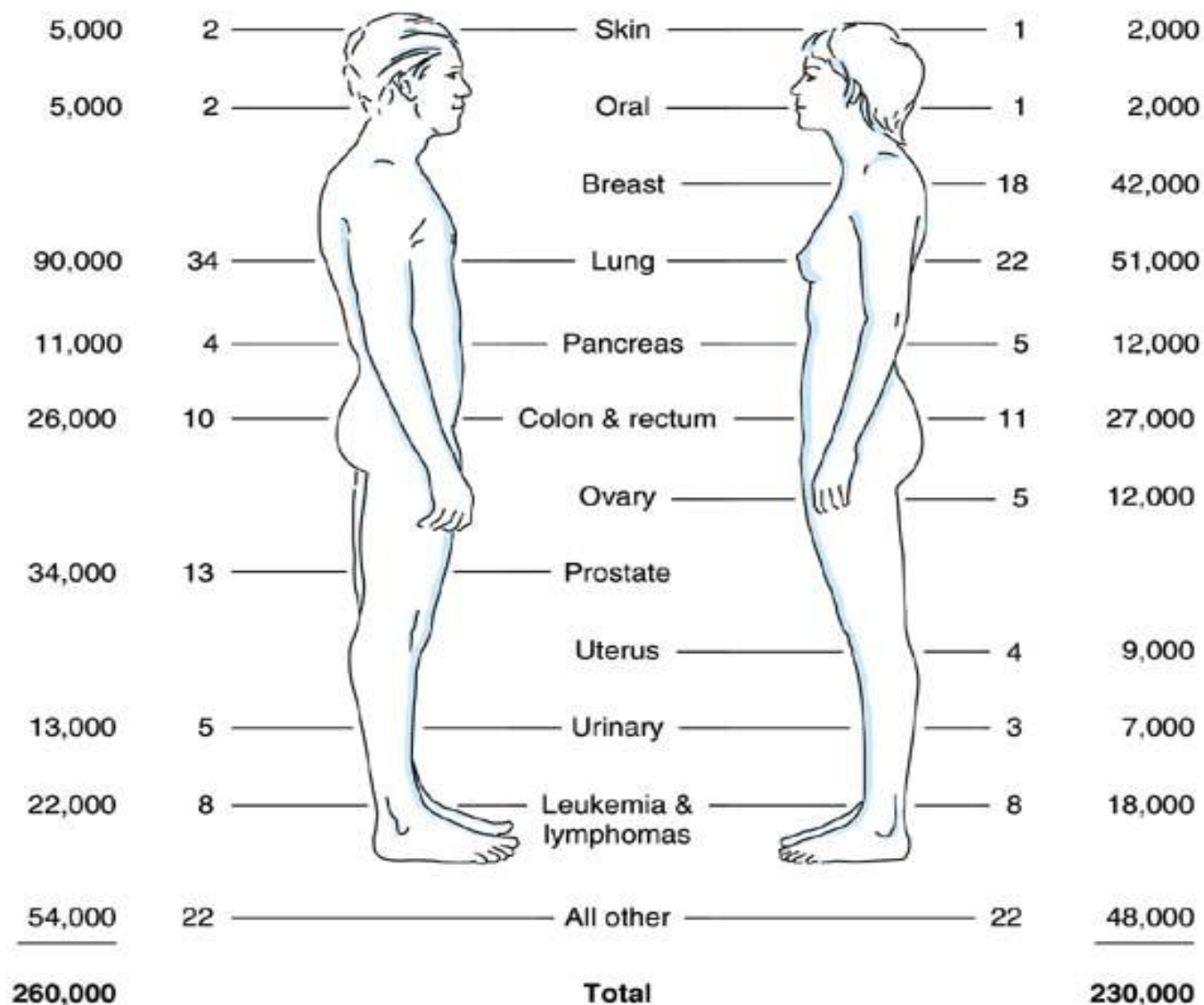
Tumor Origin



Male	
Total number	Percentage of total

Female	
Percentage of total	Total number

Tumor Origin



Major Factors Affecting Incidence

Gender

- Prostate cancer in men and uterine cancer and breast cancer in women are **obviously sex-specific**.
- Cancer of the oropharynx, esophagus, and stomach is more than twice as common in **men**, but
- Cancers of the gallbladder and thyroid and malignant melanoma are more frequent in **women**.

- **Both bladder and lung cancer are more common in men**, partly because of greater occupational exposure (dye and rubber industries for bladder cancer, mining and asbestos for lung cancer) and smoking habits.
- Recent figures show that the rate of **lung cancer** in women is fast approaching that in men as smoking habits of women match those of men (in the United States but not everywhere).

- In adults, carcinomas make up the largest group of malignant tumors; they result from neoplastic change occurring in mature adult-type epithelial tissues.
- Sarcomas occur in adults but are less common than carcinomas.

- Neoplasms of the **hematopoietic and lymphoid** cells (leukemias and lymphomas) occur at all ages.
- **Acute** lymphoblastic leukemia is common in children,
- Whereas **chronic** lympho-cytic leukemia occurs more often in the elderly

Occupational, Social, and Geographic Factors

- Increased risk of **bladder cancer** in workers in the **dye industry**
- **Lung cancer in certain miners.**
- Increased exposure to carcinogens. Because the risk is so high in certain industries, an occupational history is an essential

- **Social habits** as cigarette smoking (lung cancer)—and to a lesser extent pipe and cigar smoking, snuff taking, and tobacco chewing (cancer of the oropharynx)

Patient's sexual and childbearing histories

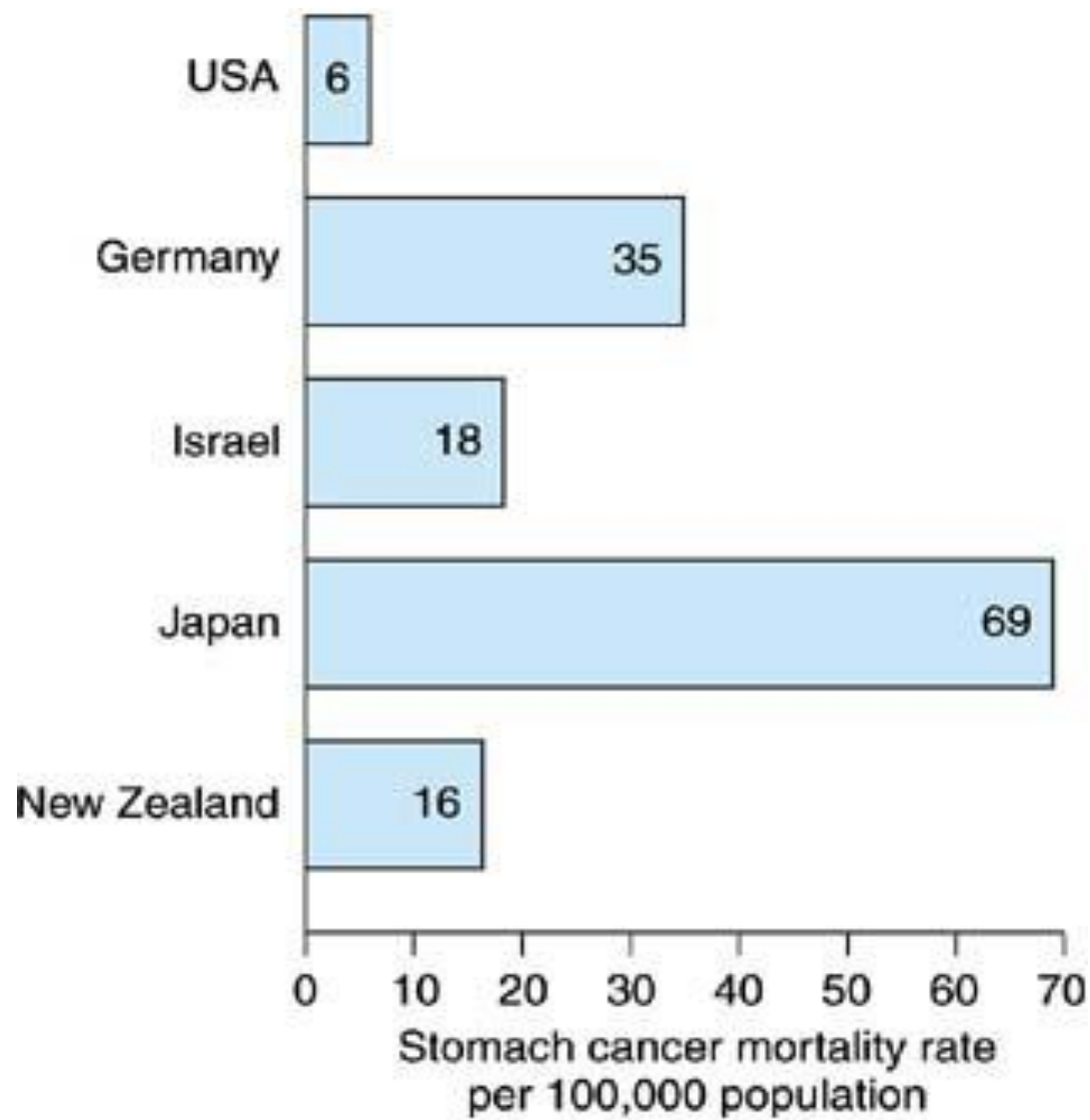
- Women who have borne **several children and have breast-fed** them have a significantly lower incidence of breast cancer than women who elect not to breast-feed or who are nulliparous. (**Nuns** have a high incidence of breast cancer.)

- Conversely, **nuns** have a lower incidence **of cervical cancer**, which appears to be most common among women who begin sexual activity early—particularly those with multiple partners.
- **Circumcised men** have a much lower incidence of carcinoma of the penis than their uncircumcised counterparts,

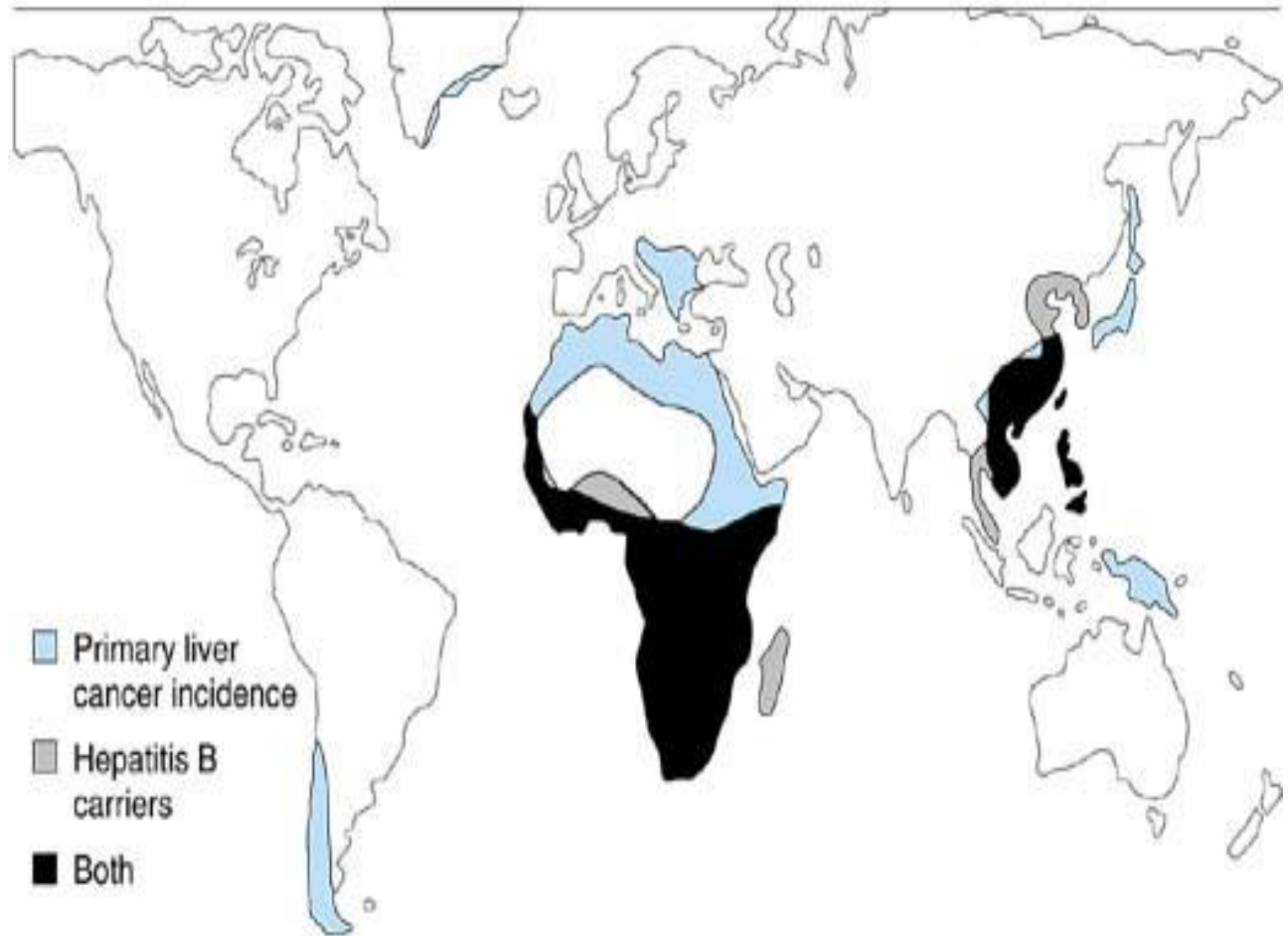
Geographic variations

- Incidence of specific types of cancer also occur from **one country to another** from **one city to another**, and from **urban to rural**
- For example, the high incidence of stomach cancer in **japan** has been related to diet (smoked raw fish).

- This type of cancer does not appear to be **genetically determined**,
- Americans. However, marked differences in the mortality rate of stomach cancer exist even within different parts of the united states



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Family History

- A few cancers have a **simple pattern of genetic inheritance** and those that do are so striking that they **warrant careful study of relatives of known cases**
- retinoblastoma,
- polyposis coli and carcinoma of the colon,
- medullary carcinoma of the thyroid

- For other cancers, the genetic link is not as strong (eg, breast cancer) or is almost nonexistent (eg, lung cancer).
- It must also be understood that familial occurrence of neoplasms may represent the action of similar environmental factors rather than a genetic predisposition

- **Cancer families with a high incidence of cancer** have also been described.
- cancer is usually of a particular type but may be of different types;
- colon,
- endometrial, and
- breast cancer occur in some families.
- Cancer in such families may **skip generations**, suggesting the **possible interplay both of recessive genetic mechanisms and of environmental factors**.

History of Associated Diseases

- Perhaps the most important finding in the history of a patient with suspected cancer is a **record of diagnosis or treatment of previous cancer.**
- A **positive history** of cancer greatly increases the chances that the **current illness** represents either a **metastasis** (which may be delayed many years) **or a second primary tumor.**
- Statistics show that patients who have had cancer—even if the lesion was totally excised—have a much **higher incidence of a second cancer, particularly in the same tissue.**

- For example, **cancer in one breast increases** the chances of cancer in the opposite breast, and
- one occurrence of **colon cancer** necessitates **repeated routine examinations** to detect the development of another colon cancer.
- Second cancers of a different type—particularly leukemia and sarcomas—also occur as a **complication of chemotherapy** and radiation used to treat the first cancer.

- In addition, certain disorders that in themselves are nonneoplastic carry an associated higher risk of development of cancer and are considered **preneoplastic diseases**.
- These diseases are uncommon, but together they constitute a significant group of risk factors

