Cancer Epidemiology – High-Yield Summary

## Definition
- Cancer is a disease of uncontrolled, abnormal cell growth.
- Caused by failure of normal cell-cycle control.
- Old cells do not die → new abnormal cells accumulate.
- Forms a tumor, invades surrounding tissues, and may metastasize.

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## Most Common Cancers in Jordan
- Males: Colorectal, Lung, Bladder, Prostate, Non-Hodgkin Lymphoma, Brain
- Females: Breast, Liver, Brain, Ovary, Non-Hodgkin Lymphoma, Thyroid
- Both Sexes: Liver, Breast, Bladder, Brain, NHL, Lung

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## Major Causes / Risk Factors of Cancer

### 1. Chemicals (Tobacco)
- Tobacco = leading preventable cause of cancer death
- Contains >7000 chemicals, >50 carcinogenic
- Causes cancers of:
- Lung, larynx, oral cavity, head & neck
- Esophagus, stomach, pancreas
- Bladder, kidney

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### 2. Diet, Obesity & Physical Inactivity
- Responsible for 30–35% of cancer deaths
- High BMI → ≥10 types of cancer
- Examples:
- Aflatoxin B1 → Liver cancer
- High-salt diet → Gastric cancer ( ↑ in Japan)
- Obesity → Colon cancer
- Physical inactivity ↓ immunity & alters hormones

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## 3. Infections (~18% of cancer deaths worldwide)

### Oncoviruses
- HPV → Cervical cancer
- EBV → Lymphoma
- HIV → Kaposi sarcoma
- HBV & HCV → Hepatocellular carcinoma

### Bacteria
- Helicobacter pylori → Gastric carcinoma

### Parasites
- Schistosoma haematobium → Bladder cancer

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## 4. Radiation
- Causes ~10% of invasive cancers
- Ionizing radiation → Leukemia
- UV radiation → Skin cancers (melanoma)
- Children are more sensitive than adults
- Non-ionizing radiation (mobile phones): possible carcinogen

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## 5. Hereditary Factors
- <0.3% carry high-risk mutations
- Account for 3–10% of cancers
- Examples:
- BRCA1/BRCA2 → Breast & ovarian cancer (>75% risk)
- Lynch syndrome → Colorectal cancer

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## 6. Occupational Exposure
- Asbestos → Mesothelioma
- Other carcinogens:
- Nickel, cobalt
- Crystalline silica (quartz)

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## 7. Hormones

- Involved in cancers of:
- Breast, endometrium, prostate, ovary, testis
- High estrogen/progesterone → ↑ breast cancer risk
- High testosterone → ↑ prostate cancer (↑ in African men)

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## 8. Associated Diseases

- Celiac disease → ↑ overall cancer risk
- Crohn's & Ulcerative colitis → GI cancers
- Immunosuppressive drugs may increase malignancy risk

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## 9. Pollution

- Air, water, soil pollution contribute to cancer
- Outdoor air pollution → Lung cancer
- Indoor coal smoke → Doubles lung cancer risk
- 6% of pollution-related deaths due to lung cancer

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## Cancer Prevention (30–50% Preventable)

### 7 High-Yield Prevention Tips

1. Avoid tobacco (including secondhand smoke)
2. Healthy diet
- Fruits, vegetables, whole grains
- Avoid obesity & animal fats
3. Maintain healthy weight & exercise
- ≥150 min moderate or ≥75 min vigorous/week
4. Sun protection
- Avoid midday sun, use sunscreen
- No tanning beds
5. Vaccination
- HBV → Prevent liver cancer
- HPV → Prevent cervical & genital cancers
6. Avoid risky behaviors
- Safe sex, fewer partners
- Do not share needles
7. Regular screening
- Breast, cervix, colon, skin cancers
- Early detection = better prognosis

Key Exam Pearls ⭐

- Tobacco = #1 preventable cause
- Infections cause ~18% of cancers
- Obesity + inactivity = major modifiable risks
- Vaccination is cancer prevention
- Early detection saves lives

«قال ابن الجوزي - رحمه الله- :

ومتى رأيتَ في نفسك عجزا فسَل المُنعِم، أو كسلا فسل الموفِّق، فلن تنال خيرا إلا بطاعته، ولا يفوتك خَير إلا بمعصيته، فمَن الذي أَقبل عليه فلَمْ يَرِد كل مراد؟ ومَن الذي أَعرض عنه فمَضى بفائدة، أو حظِي بغرض من أغراضه؟».