Health Promotion, Screening, & Early Detection
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UW Medicine/Valley Medical Center

OCN® Test Content Outline 2018

I. Care Continuum – 19%
   A. Health promotion & disease prevention
   B. Screening and early detection
   C. Navigation
   D. Advance care planning
   E. Epidemiology
      1. Modifiable risk factors
      2. Non-modifiable risk factors
   F. Survivorship
   G. Treatment-related considerations
   H. End-of-life care

Cancer Epidemiology

• The Study of:
  – How cancer is distributed in a population
  – Factors that influence cancer distribution over time
  – Trends in cancer over time
    • Impacts of treatment, screening, and preventive measures

Cancer Incidence

• The number of new cancers of a specific site/type occurring in a specified population during a year
• Usually expressed as the number of cancers per 100,000 population at risk.

Incidence Rate = (New Cancers / Population) × 100,000
Cancer Prevalence

- The total number of people living with cancer at any point in time.
- Includes new (incidence) and preexisting cases
- It is a function of both past incidence and survival

Incidence vs Prevalence

- Incidence:
  - About 1,688,780 new cancer cases are expected to be diagnosed in 2017
  - This estimate does not include carcinoma in situ (noninvasive cancers)
- Prevalence
  - 14.5 Americans with a history of cancer were alive on January 1, 2014

Sources of Epidemiologic Information: Cancer Facts & Figures

- Published each year by the American Cancer Society (ACS)
- Download online at www.cancer.org
- Estimated annual cancer incidence, prevalence, & mortality
- Survival statistics
- Information on cancer symptoms, risk factors, early detection, and treatment

Cancer Statistics

- National Cancer Institute
  - Surveillance, Epidemiology, and End Results Program (SEER)
- Video Series: “Did You Know”
  - Multiple videos on cancer statistics
    - Cancer Health Disparities
    - Cancer Survivors
    - Cancer Statistics (http://seercancer.gov/DidYouKnow/index.html)
    - Specific tumor types (e.g. breast, lung, colorectal, etc)
Cancer Mortality

- **The number of deaths attributed to cancer during a specified time period in a defined population**
- In 2017:
  - About 600,920 Americans expected to die of cancer
  - This is almost 1,647 people per day
- Cancer is the second most common cause of death in US (accounts for nearly 1 of every 4 deaths)
  - Exceeded only by heart disease

Mortality Rates

- Cancers associated with the highest mortality:
  - Lung
  - Prostate/Breast
  - Colon
  - Pancreas
- These 4 cancers accounts for half the total cancer deaths
- Mortality rates provide insight into:
  - Strengths of early detection measures
  - Effectiveness of current standard therapy
Cancer Health Disparities

• Adverse differences in incidence, prevalence, mortality, survivorship, and burden of cancer or related health conditions

• Exist among specific population groups in the U.S.
  – Population groups may be characterized by age, disability, education, race/ethnicity, gender, income, poverty, lack of health insurance, geographic location & medically underserved
Statistics on Race/Ethnicity Incidence & Mortality in Cancer

<table>
<thead>
<tr>
<th>Tumor Type</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>White women have highest incidence</td>
</tr>
<tr>
<td></td>
<td>African American women have highest mortality</td>
</tr>
<tr>
<td>Cervical</td>
<td>Hispanics/Latina women have highest incidence rates</td>
</tr>
<tr>
<td></td>
<td>African American women have highest mortality rates</td>
</tr>
<tr>
<td>Prostate</td>
<td>African American men have highest incidence and mortality</td>
</tr>
<tr>
<td></td>
<td>(twice as likely to die as white men)</td>
</tr>
<tr>
<td>Lung &amp; Colorectal</td>
<td>African American men have highest incidence &amp; mortality</td>
</tr>
<tr>
<td>Liver &amp; Stomach</td>
<td>Asian/Pacific Islanders have highest incidence &amp; mortality</td>
</tr>
<tr>
<td>Kidney</td>
<td>American Indians/Alaska Natives have highest incidence &amp; mortality</td>
</tr>
</tbody>
</table>

Cancer Rates by Population Variables

- **Age**
  - Risk of developing cancer increases with age
  - 78% of all cancers diagnosed in age ≥ 55 years
- **Gender**
  - Women: 1 in 3 lifetime risk of developing cancer
  - Men: 1 in 2 lifetime risk of developing cancer

Cancer Rates by Population Variables

- **Geography**
  - White women who live in Appalachia have significantly higher risk of developing cervical cancer than other white women in U.S
  - More advanced disease on diagnosis for rural populations
  - Migratory data – when people move to a population area, they develop the cancer pattern of the area
- **Socioeconomic status (SES)**
  - Low SES associated with increased risk of lung, cervical, stomach, and head/neck cancer
  - Tobacco use has increased among poorer populations
  - High SES associated with increased risk of breast, prostate, and colon cancer
Levels of Prevention

• Primary
  • Measures to prevent disease
    — Avoid carcinogen exposure
    — Promote healthy lifestyle
  • Reduces the risk of developing cancer; however some individuals will still develop malignancy
  • Focus is to:
    — Prevent cancer from ever developing OR
    — Delay development of malignancy

• Secondary
  • Early detection
    — Subclinical, asymptomatic, or early disease in people without signs & symptoms
  • Identifying people at risk for malignancy & implementing appropriate screening
  • Examples of secondary prevention:
    — Pap smear to detect cervical cancer
    — Mammogram to detect a nonpalpable breast cancer
    — Colonoscopy to detect or remove a polyp or early colon cancer

• Tertiary Cancer Prevention
  • Monitoring for and preventing recurrence of the originally diagnosed cancer
  • Cancer screenings for second primary cancer & long-term side effects of treatment in cancer survivors
  • Examples of tertiary cancer prevention:
    — Monitoring tumor markers for early signs of recurrence
    — Detecting secondary malignancies early in long-term survivors
Impact of Primary Prevention

- One-third (1/3) of the cancer deaths are attributed to lifestyle factors, such as:
  - Poor nutrition, physical activity, overweight, and obesity
- A healthy lifestyle and broader use of screening tests could prevent and delay the development of many cancers.

Facts about Tobacco Use

- Smoking increases the risk of cancer of the mouth, nasal cavities, larynx, pharynx, esophagus, stomach, pancreas, kidney, bladder, and uterine, cervix, as well as leukemia.
- Risk of lung cancer:
  - 23 times higher in male smokers
  - 13 times higher in female smokers
- Smoking cessation greatly reduces the risk of death from cancer and other causes.
- Risk of lung cancer also is increased by exposure to secondhand smoke.

Recommendations for Cancer Prevention

Refer to “Recommendations for Cancer Prevention” Handout

- Nutrition
- Exercise
- Tobacco cessation
- Skin cancer prevention
- Prevent HPV infection
Benefits of Tobacco Cessation

**Short-Term Benefits**
- Normalization of:
  - Elevated blood pressure, pulse, and body temperature due to nicotine
  - Carbon monoxide and oxygen levels.
- Taste and smell acuity improves.
- Shortness of breath decreases.
- Risk of infection decreases.
- Coughing and sinus congestion decrease.
- Energy level and ability to walk improve.

**Long-Term Benefits**
- Decreased risk of dying from lung cancer
- Decreased risk of throat, bladder, kidney, or pancreatic cancer
- Reduced risk of stroke or heart attack

Tobacco Cessation

- Cessation is most successful with a combination of behavioral counseling and pharmacotherapy.
- Tobacco users should be advised to quit at each clinical encounter.
- Behavioral counseling can be accomplished through group or individualized sessions.

START Method

- **S** = Set a quit date.
- **T** = Tell family, friends, and coworkers that you plan to quit.
- **A** = Anticipate and plan for the challenges you will face while quitting.
- **R** = Remove cigarettes and other tobacco products from your home, car, and work.
- **T** = Talk to a healthcare provider about getting help to quit.

Smoking Cessation Aids

- Nicotine gum and lozenges
- Nicotine patch
- Nicotine inhaler
- Bupropion
- Varenicline
Sample Question

A research study focuses on smoking cessation among a specific target population. This group's research is focusing on what type of prevention?

a. Primary  
b. Secondary  
c. Tertiary  
d. Integrated

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Sample Question

Eric is a member of a research team that conducts and epidemiologic study. They determine in a given year approximately 1 out of every 12,000 American men has prostate cancer. That figure represents:

a. An incident rate  
b. A mortality rate  
c. A prevalence rate  
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Risk Factors & Risk Assessment

- **Risk Factors**
  - Trait or characteristic associated with a statistically significant increased likelihood of developing a disease
  - Do not predict who will certainly develop cancer but rather who has an increased chance of developing cancer

- **Risk Assessment**
  - Risk factor assessment guides recommendations for cancer prevention & early detection

Absolute Risk

- Occurrence of cancer, either incidence (new cases) or mortality (deaths), in the general population.
- Helpful to understand what the chances are for all people in a population of developing or dying of a particular disease.
- Expressed as:
  - Number of cases for a specified denominator
  - Cumulative risk up to a specified age
  - (e.g. one in eight women will develop breast cancer if they live to age 85)

Absolute risk assumptions

- Describes the "average" risk
- Will overestimate risk for some women with no risk factors
- Will underestimate risk for some women with several risk factors

Relative Risk

- Comparison of the incidence or deaths among those with a particular risk factor compared to those without the risk factor
- Helpful to better understand personal chances of developing cancer as compared to individuals without such risk factors
- Evaluating Relative Risk
  - No known risk = 1.0
  - A number > 1.0 suggests increased risk
  - A number < 1.0 suggests a possible protective factor

Selected Relative Risk Factors for Colorectal Cancer

<table>
<thead>
<tr>
<th>Risk Factor for Colorectal Cancer</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>1.69</td>
</tr>
<tr>
<td>Obesity (body mass index &gt; 30)</td>
<td>1.13</td>
</tr>
<tr>
<td>Physical activity (≥ 20 hours/week)</td>
<td>-0.86*</td>
</tr>
<tr>
<td>High vegetable consumption (≥ 5 servings/day)</td>
<td>-0.99</td>
</tr>
<tr>
<td>Red meat (≥ 2 servings/week as main dish)</td>
<td>1.3</td>
</tr>
<tr>
<td>Multivitamin use</td>
<td>-0.54</td>
</tr>
<tr>
<td>Aspirin/nonsteroidal anti-inflammatory drug use (≥ 2 tablets/week)</td>
<td>-0.39</td>
</tr>
<tr>
<td>Alcohol consumption (≥ 1 drink per day)</td>
<td>1.1</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1.3</td>
</tr>
<tr>
<td>One first-degree relative with colorectal cancer</td>
<td>2.2</td>
</tr>
<tr>
<td>More than one first-degree relative with colorectal cancer</td>
<td>4.0</td>
</tr>
<tr>
<td>Relative with colorectal cancer diagnosed before age 45</td>
<td>3.9</td>
</tr>
</tbody>
</table>

* A negative sign indicates a protective effect or risk reduction

Note: Based on information from American Cancer Society, 2009.
Goals of Cancer Risk Factor Assessment

- Provide accurate information about the genetic, biologic, and environmental factors related to an individual's risk of developing cancer
- Formulate appropriate recommendations for primary and secondary prevention
- Offer support to facilitate adjustment to the information regarding risk
- Promote adherence to recommendations for prevention & early detection

Principles of Secondary Cancer Prevention

- Cancer screening aimed at asymptomatic people with goal of finding disease when it is most treatable
- Seeks to decrease morbidity & mortality associated with cancer by finding it in early stage when treatment is most likely to be effective

Variations in Cancer Screening Guidelines

- Major source of confusion in cancer screening stems from variations in screening recommendations among the various professional agencies.
- Recommendations vary based on the goals of the organization
  - American Cancer Society: Screening standards goal is based on detecting malignancy
  - U.S. Preventive Services Task Force (USPSTF): Uses strict criteria for evidence of effectiveness. Cost-effectiveness is an important consideration for this group
  - National Comprehensive Cancer Network (NCCN)

Example of Variations in Cancer Screening with Mammography Guidelines

<table>
<thead>
<tr>
<th>Agency</th>
<th>Mammography Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Cancer Society (ACS, 2015)</td>
<td>Age 40 – 44 years: Women should have the choice to start annual mammograms if they wish to do so</td>
</tr>
<tr>
<td></td>
<td>Age 45 – 54: Annual mammograms</td>
</tr>
<tr>
<td></td>
<td>Age &gt; 55: Mammograms every 2 years (or can continue annual screening) if in good health and life expectancy &gt; 10 years</td>
</tr>
<tr>
<td>US Preventative Task Force (USPSTF, 2016)</td>
<td>Age 40 – 49: Every two years based on individual risk assessment and shared-decision making</td>
</tr>
<tr>
<td></td>
<td>Age 50 – 74: Every two years</td>
</tr>
<tr>
<td>National Comprehensive Cancer Network (NCCN, 2014)</td>
<td>Annually beginning age 40</td>
</tr>
</tbody>
</table>
Comparison of Cancer Screening Recommendations

- Online grid that compares cancer screening recommendations from:
  - American Cancer Society
  - National Cancer Institute
  - US Preventive Services Task Force

Cancer Screening & Early Detection Recommendations

Refer to American Cancer Society “Guidelines for Early Detection of Cancer”

- Breast Cancer
- Colon and rectal cancer
- Cervical cancer
- Endometrial (uterine) cancer
- Prostate Cancer
- Cancer-related check-ups

Sample Question

Routine screening can result in early detection of which type of cancer?

a. Liver  
b. Bladder  
c. Kidney  
d. Rectum

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Sample Question
Which of the following ethnic groups in the United States has the highest incidence and mortality for prostate cancer?
- a. Asian American
- b. African American
- c. Hispanic American
- d. Non-Hispanic American

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Sample Question
A 20-year-old woman with family history of BRCA1 and BRCA2 breast cancer asks when she should have a mammogram. The nurse recommends:
- a. Talking with her doctor about the benefit and limitations of starting screening early
- b. Having a yearly mammogram beginning at age 35
- c. Having a breast ultrasound after the birth of her first child
- d. Screening to begin at the age of her family member’s diagnosis

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Sample Question

In the United States, the incidence of cancer is highest among which of the following age groups?

a. Under 9 years
b. 25-39 years
c. 40-50 years
d. Over 55 years

THANK YOU!

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