Unit 11: Cancer in Women

Unit Objectives

- Identify important trends in cancer epidemiology.
- Understand the risk factors, screening and treatment options in cancers important to women
- Identify important barriers to health prevention for cancer
Cancer as a Women’s Health Topic

- 2nd leading cause of death
- 275,000 deaths in 2012
- Occurs in older women

Racial/Ethnic Disparities:
- 2nd Cause of Death
  - Black
  - White
  - Hispanic
- Leading Cause of Death
  - American Indian/Alaskan Native
  - Asian

The Book is Wrong!!
## Cancer Incidence Rates per 100,000 Women by Site and Race/Ethnicity, 2010

<table>
<thead>
<tr>
<th>Type of Cancer</th>
<th>Total (Rank)</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>American Indian/ Native Alaskan</th>
<th>Asian/ Pacific Islander</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female Breast</td>
<td>118.7 (1)</td>
<td>119.5</td>
<td>117.2</td>
<td>86.1</td>
<td>61.2</td>
<td>85.8</td>
</tr>
<tr>
<td>Lung and Bronchus</td>
<td>52.4 (2)</td>
<td>53.8</td>
<td>50.0</td>
<td>29.4</td>
<td>36.2</td>
<td>27.1</td>
</tr>
<tr>
<td>Colon and Rectum</td>
<td>35.4 (3)</td>
<td>34.4</td>
<td>42.6</td>
<td>25.0</td>
<td>27.0</td>
<td>28.5</td>
</tr>
<tr>
<td>Uterine</td>
<td>24.8 (4)</td>
<td>25.2</td>
<td>23.4</td>
<td>20.0</td>
<td>15.6</td>
<td>17.7</td>
</tr>
<tr>
<td>Thyroid</td>
<td>19.9 (5)</td>
<td>20.9</td>
<td>12.4</td>
<td>19.0</td>
<td>8.4</td>
<td>20.1</td>
</tr>
<tr>
<td>Non-Hodgkin Lymphoma</td>
<td>15.7 (6)</td>
<td>16.2</td>
<td>4.6</td>
<td>14.5</td>
<td>9.2</td>
<td>10.1</td>
</tr>
<tr>
<td>Melanoma</td>
<td>15.3 (7)</td>
<td>17.6</td>
<td>1.0</td>
<td>5.3</td>
<td>8.1</td>
<td>1.2</td>
</tr>
<tr>
<td>Ovary</td>
<td>11.4 (8)</td>
<td>11.8</td>
<td>8.8</td>
<td>10.3</td>
<td>7.8</td>
<td>8.6</td>
</tr>
<tr>
<td>Kidney</td>
<td>10.8 (9)</td>
<td>10.8</td>
<td>12.1</td>
<td>11.0</td>
<td>11.8</td>
<td>10.7</td>
</tr>
<tr>
<td>Pancreas</td>
<td>10.6 (10)</td>
<td>10.3</td>
<td>13.6</td>
<td>11.6</td>
<td>7.5</td>
<td>8.7</td>
</tr>
</tbody>
</table>


## Cancer Mortality Rates per 100,000 Women by Site and Race/Ethnicity, 2010

<table>
<thead>
<tr>
<th>Type of Cancer</th>
<th>Total (Rank)</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>American Indian/ Native Alaskan</th>
<th>Asian/ Pacific Islander</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung and Bronchus</td>
<td>37.9 (1)</td>
<td>39.2</td>
<td>36.3</td>
<td>14.3</td>
<td>26.2</td>
<td>18.1</td>
</tr>
<tr>
<td>Female Breast</td>
<td>21.9 (2)</td>
<td>30.2</td>
<td>30.2</td>
<td>13.7</td>
<td>11.4</td>
<td>11.7</td>
</tr>
<tr>
<td>Colon and Rectum</td>
<td>13 (3)</td>
<td>12.6</td>
<td>17.2</td>
<td>9.4</td>
<td>9.7</td>
<td>9.8</td>
</tr>
<tr>
<td>Pancreas</td>
<td>9.6 (4)</td>
<td>9.4</td>
<td>12.1</td>
<td>7.9</td>
<td>6.1</td>
<td>7.5</td>
</tr>
<tr>
<td>Ovary</td>
<td>7.8 (5)</td>
<td>8.1</td>
<td>6.6</td>
<td>5.5</td>
<td>5.1</td>
<td>4.7</td>
</tr>
<tr>
<td>Leukemia</td>
<td>5.2 (6)</td>
<td>5.4</td>
<td>4.6</td>
<td>4.0</td>
<td>3.3</td>
<td>3.2</td>
</tr>
<tr>
<td>Non-Hodgkin Lymphoma</td>
<td>4.9 (7)</td>
<td>5.0</td>
<td>5.8</td>
<td>4.4</td>
<td>2.5</td>
<td>3.3</td>
</tr>
<tr>
<td>Uterine Corpus</td>
<td>4.5 (8)</td>
<td>4.2</td>
<td>7.5</td>
<td>3.4</td>
<td>2.7</td>
<td>3.0</td>
</tr>
<tr>
<td>Liver</td>
<td>3.5 (9)</td>
<td>3.3</td>
<td>4.3</td>
<td>5.4</td>
<td>4.3</td>
<td>6.1</td>
</tr>
<tr>
<td>Brain and other Nervous System</td>
<td>3.4 (10)</td>
<td>3.7</td>
<td>3.1</td>
<td>3.4</td>
<td>2.7</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Cancer Incidence and Mortality in Florida

Top 10 Cancer Sites: 2010, Female, Florida—All Races

CANCER OF THE BREAST TISSUE
1ST LEADING CANCER INCIDENCE
Classification System
Female Breast Cancer

Surveillance, Epidemiology and End Results program as submitted to the National Cancer Institute
Risk Factors for Breast Cancer

- Genetics:
  - 2x risk of developing breast cancer - when first-degree relatives (mothers/sisters) who have breast cancer
  - 5-10% of breast cancer cases are believed to be inherited
  - BRCA1 and BRCA2
    - Most common in women of Ashkenazi Jewish, Norwegian, Icelandic, or Dutch ancestry.
Risk Factors for Breast Cancer

- **Hormones**
  - Exposure to estrogen and progesterone
  - Menstruation < 12 yo
  - Menopause > 50
  - Never having a child
  - Having a child later in life > 30
  - Obesity
  - Hormone replacement therapy
    - Findings on this is murky
  - Oral contraceptives
    - Women > 35 and who smoke

Breast Cancer Screening and Diagnosis

- **Breast Self-Examination**
- **Clinical Breast Examination**
- **Mammogram**
Mammography

Breast Cancer Treatment - Surgery
Breast Cancer Treatment – Adjuvant Therapy

Has breast cancer prevention been in the news recently?
Ovarian Cancer

CANCER OF THE OVARIES

- 5th leading cause of cancer death in women
  - 8th in incidence rate

- Usually affects women around the age of menopause

- Accounts for 3% of all female cancers

- Risk factors:
  - Family history of ovarian or breast cancer
  - Or those with BRCA1 or BRCA2 mutation
Ovarian Cancer

Surveillance, Epidemiology and End Results program as submitted to the National Cancer Institute

Diagnosis and Treatment

Diagnosis
- “silent cancer”
- Pelvic examinations and laboratory tests

Treatment
- Surgery
- Radiation
- Chemotherapy
Cervical Cancer

Cervical cancer is a type of uterine cancer, affecting the lower part of the uterus—the cervix.

In 2009 -

- 12,357 women in the United States were diagnosed with cervical cancer.
- 3,909 women in the United States died from cervical cancer.

Cervical and Uterine Cancer:

- 8th cause of death from cancer
- 4th highest incidence of cancer
Cervical Cancer

Cervical Cancer

Surveillance, Epidemiology and End Results program as submitted to the National Cancer Institute
**Risk Factors**

- Strains of HPV
- Lower immune system suppression
- Having HIV/AIDS
- Multiple sexual partners
- Smoking cigarettes
- Having a mother who took diethy stilbestrol (DES)
- Family history

**Prevention**

<table>
<thead>
<tr>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPV Vaccine</td>
<td>Pap smear</td>
</tr>
<tr>
<td></td>
<td>Begin screening at 21/3 years</td>
</tr>
<tr>
<td></td>
<td>after onset of sexual activity</td>
</tr>
<tr>
<td></td>
<td>DNA of cancer-causing HPV</td>
</tr>
<tr>
<td></td>
<td>30 years or older</td>
</tr>
</tbody>
</table>

- Requires three shots
  - Gardasil – quadrivalent
  - Ceravix – bivalent
HPV Vaccine Coverage among Teens, US

Percentage of U.S. Women Aged 18 Years and Older Who Have Had a Pap Test in the Last 3 Years by Race and Ethnicity

National Center for Health Statistics.
Percentage of U.S. Women Aged 25 Years and Older Who Have Had a Pap Test in the Last 3 Years by Education Level

Lung Cancer
Trends in Lung Cancer Incidence by Sex

![Graph showing lung cancer incidence rate by sex, 1973-2008](image)
Risk Factors for Lung Cancer

- Radon, asbestos, radioactive materials, some industrial compounds.
- Workplace exposure to asbestos.
- Cigarette smoking has been the most significant factor
  - Responsible for 90% of cases
    - 80% of deaths

Cigarette Smoking in the Past Month Among Adults Aged 18 and Older, by Poverty Status* and Sex, 2009–2010

*Poverty level, defined by the U.S. Census Bureau, was $22,314 for a family of four in 2010; adults aged 18-22 years living in college dormitories were excluded from poverty determinations.

Risk Factors

- **Secondhand smoke**
  - An individual living with a smoker has a 30% higher chance of developing lung cancer
  - 3,000 deaths each year from secondhand smoke

- A family history of lung cancer may increase a person’s risk
### Diagnosis and Treatment

<table>
<thead>
<tr>
<th>Screening</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>- No specific screening techniques or guidelines for early detection</td>
<td></td>
</tr>
<tr>
<td>- CT scans</td>
<td>- Limited due to the late stage detection</td>
</tr>
<tr>
<td></td>
<td>- Surgical removal of portions of the lung</td>
</tr>
<tr>
<td></td>
<td>- Followed by radiation and chemotherapy</td>
</tr>
</tbody>
</table>

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#### American Cancer Society 2012

**THE TRUE COST OF SMOKING**

**DOLLARS ARE WASTED**

Every society gives up the opportunity to buy something important when valuable resources are spent treating tobacco-related illnesses.

<table>
<thead>
<tr>
<th>Country</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>$6.6B</td>
</tr>
<tr>
<td>France</td>
<td>$9.5B</td>
</tr>
<tr>
<td>UK</td>
<td>$6.2B</td>
</tr>
<tr>
<td>China</td>
<td>$2.8B</td>
</tr>
</tbody>
</table>

**MISSED OPPORTUNITIES FOR PROGRAMS AND SERVICES**

- Transportation
- Public Safety
- Education
- Rural Development

- $96B
SOCIETY PAYS AND SO DO YOU
The burden of death, disease, and disability by the use of tobacco products doesn’t just lie with the smoker, but society as well.

SOCIETY
TOBACCO-RELATED HEALTH COST AND PRODUCTIVITY LOSS IN THE US

| Health Cost | $193 Billion |

YOU

| Average Price Per Pack of Cigarettes in the US | $6.36 |

$35
Health-Related Costs to You Per Pack of Cigarettes

WHAT HAPPENS WHEN A SMOKER QUITS
A 15 YEAR TIMELINE

20 MINUTES after quitting
The heart rate and blood pressure drop back to normal levels.

12 HOURS after quitting
The level of carbon monoxide in the blood drops to normal.

2 WEEKS after quitting
Circulation and lung function improve.

1 YEAR after quitting
The risk of getting coronary heart disease is half as high as a smoker.

5 YEARS after quitting
The risk of resuming mouth, throat, esophagus, and bladder cancer is half of what it is for smokers. Risk of renal cancer and stroke falls, too.

10 YEARS after quitting
The risk of heart disease is equal to a non-smoker’s risk.

1-9 WEEKS after quitting
Smoker “smell” like a constant cough and shortness of breath become less pronounced. The cary tumor tissue, the lungs and “mucus” work normally again and the lungs begin to repair itself after infection.
Colorectal Cancer

3rd leading cause of cancer incidence and mortality
- Cases have declined sharply since 1990s
- 25,000 women died in 2012
- 5 year survival rates (76%)
Colorectal Cancer Risk Factors

- Increasing age
  - 90% of people with colorectal cancer are older than 50 years of age
- Genetic components
  - 2x risk with family member who has had colorectal cancer or FAP
- Dietary factors
  - Associated with high fat/low fiber diets

Colorectal Cancer

<table>
<thead>
<tr>
<th>Screening</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fecal occult blood test</td>
<td>Surgery to remove parts of the colon</td>
</tr>
<tr>
<td>Sigmoidoscopy</td>
<td>Radiofrequency ablation</td>
</tr>
<tr>
<td>Colonoscopy</td>
<td>Chemotherapy</td>
</tr>
<tr>
<td></td>
<td>Radiation</td>
</tr>
</tbody>
</table>
Skin Cancer

- One of the 10 most common cancers in women
  - But not reportable to cancer registries
- Estimated 32,000 cases in 2012
  - 9,000 deaths
  - If detected early, 5 year survival rates – 93%
Melanoma of the Skin
Incidence Rates by Race/Ethnicity and Sex, U.S., 1999–2009

Surveillance, Epidemiology and End Results program as submitted to the National Cancer Institute
ANYONE CAN GET SKIN CANCER, BUT BE EXTRA CAREFUL IF YOU...

- have natural blonde or red hair
- have freckles
- are fair skinned
- spend a lot of time outdoors
- have had skin cancer before
- live in or travel to hot climates or high altitudes
- take medications that make you sensitive to light
- have had a lot of sunburns and burn before tanning
- have a condition that lowers your immune system
- have a family history of skin cancer, especially melanoma
- have a lot of moles, or large or irregularly shaped moles (see cancer.org/moles)

PROTECTING YOURSELF IS VITAL

DON'T FORGET TO...

- Cover up: Wear sunscreen, long sleeves, long pants, and wide-brimmed hats.
- Block out: Use sunscreen at least 15 minutes before sun exposure.
- Be sun-smart: Avoid sun exposure during peak hours (10 AM to 4 PM) and use indoor lighting or shading when possible.

SPF 30 BLOCKS 97% OF UV RAYS

Sunscreen

BROAD SPECTRUM
Class Wrap Up

- **Key Terms:**
  - Mammogram, BRCA1 +2, Adjuvant Therapy, Colonoscopy, Melanoma

- **Individual Health Importance:**
  - Understand key social determinants of health that affect important screening behaviors.

- **Public Health Importance:**
  - Cancer among women warrants considerable public health resources as the 2nd leading cause of death in women.

- **Social/Political Importance:**
  - The cost of cancer to society could be better diverted to other important health concerns with the prevention of unhealthy behaviors.