UNDERSTANDING CANCER(S) RISK
Ventura County Cancer(s)
Incidence and Mortality

October 26, 2015

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Overview of Presentation

- Epidemiology - Definition
- What Cancers Are
- Environmental and Other Causes of Cancer
- Detection of Increased Risk
- Ventura County Cancer Incidence Data
- Resources for More Information
Useful Definitions

**Epidemiology** – The study of the distribution and determinants of health-related states or events in human populations and the application of this study to the prevention and control of health problems.
What Cancers Are

- Hundreds of different malignancies – defined by different cell types and organ of origin
- Cancers should not be classified as one disease
- Carcinomas (surface of structures), Sarcomas (structural), Leukemias (blood-borne), Lymphomas (solid tumors – blood cells)
Environmental and Other Causes

- Environment – quality of air, water, and soil
- Other “Environment” – Personal Lifestyle choices: food, alcohol intake, tobacco use, exposure to infections, workplace exposures
- Chemicals – Carcinogens – Mostly animal studies or highly exposed workers
- Very rare to find increased risk to the population around industrial site or dump
Demographic Markers for Increased Risk

- Lung cancer by tobacco, education (SES)
- Oropharynx cancer by tobacco, alcohol intake
- Cervical cancer by failure to participate in PAP testing
- Kaposi sarcoma by immune compromised
- Prostate cancer by age, race/ethnicity, access to care
- Stomach cancer by H. Pylori – smoldering common bacterial infection
- Liver cancer by Hep B carrier status
- Thyroid cancer by access to healthcare
- Mesothelioma by occupational exposure to asbestos
- Melanoma by race (burn during childhood) and education
- Breast cancer by education (SES), occupation
Detection of Increased Risk – Cancer Clusters

- A cancer cluster is the occurrence of a greater than expected number of cancer cases among a group of people in a defined geographic area over a specific time period.
Challenges to Investigating Cancer Clusters

- Kind of cancer involved
- Number of cancers involved
- Determining Statistical Significance
- Relevant population and geographic area
- Identifying a cause for a cluster
Invasive Cancer(s) Rate, 1988-2012

1 – Prostate – 125.2
2 – Breast – 70.9
3 – Lung/Bronchus – 42.7
4 – Colon/Rectum – 38.4
5 – Melanoma – 28.1
## Invasive Cancer Rates by Gender, 2008-2012

<table>
<thead>
<tr>
<th>Site</th>
<th>Female Cases</th>
<th>Female AA Rate</th>
<th>Male Cases</th>
<th>Male AA Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>2999</td>
<td>132.8</td>
<td>2463</td>
<td>125.2</td>
</tr>
<tr>
<td>Lung and Bronchus</td>
<td>909</td>
<td>40.6</td>
<td>804</td>
<td>45.7</td>
</tr>
<tr>
<td>Colon &amp; Rectum</td>
<td>745</td>
<td>32.3</td>
<td>854</td>
<td>45.5</td>
</tr>
<tr>
<td>In Situ Breast</td>
<td>738</td>
<td>32</td>
<td>725</td>
<td>38</td>
</tr>
<tr>
<td>Corpus Uteri</td>
<td>577</td>
<td>24.6</td>
<td>569</td>
<td>31.8</td>
</tr>
</tbody>
</table>
Cancer(s) Mortality Rate, 1988-2013

1 – Lung/Bronchus – 32.4
2 – Prostate – 20.6
3 – Colon/Rectum – 13.9
4 – Breast – 11.9
5 – Pancreas – 10.3
## Cancer Mortality Rates by Gender, 2008-2012

<table>
<thead>
<tr>
<th>Site</th>
<th>Female Cases</th>
<th>AA Rate</th>
<th>Male Site</th>
<th>Cases</th>
<th>AA Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung and Bronchus</td>
<td>668</td>
<td>29.7</td>
<td>Lung and Bronchus</td>
<td>632</td>
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<tr>
<td>Breast</td>
<td>501</td>
<td>21.6</td>
<td>Prostate</td>
<td>338</td>
<td>20.6</td>
</tr>
<tr>
<td>Colon &amp; Rectum</td>
<td>281</td>
<td>11.8</td>
<td>Colon &amp; Rectum</td>
<td>297</td>
<td>16.6</td>
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<tr>
<td>Miscellaneous</td>
<td>224</td>
<td>9.8</td>
<td>Miscellaneous</td>
<td>218</td>
<td>12.3</td>
</tr>
<tr>
<td>Pancreas</td>
<td>216</td>
<td>9.6</td>
<td>Pancreas</td>
<td>203</td>
<td>11.1</td>
</tr>
<tr>
<td>Ovary</td>
<td>179</td>
<td>7.8</td>
<td>Liver and Intrahepatic Bile Duct</td>
<td>154</td>
<td>8</td>
</tr>
</tbody>
</table>
Invasive Prostate Cancer Rate, 1988-2012

![Graph showing invasive prostate cancer rate from 1988 to 2012. The graph displays rate per 100,000 population over the years. There are lines indicating VC Age-Adjusted Rate and CA Statewide Age-Adjusted Rate. The trend shows a decrease over time.]
Invasive Lung/Bronchus Cancer Rate, 1988-2012

Rate per 100,000 population

VC Age-Adjusted Rate
CA Statewide Age-Adjusted Rate
Linear (VC Age-Adjusted Rate)
Linear (CA Statewide Age-Adjusted Rate)
Invasive Colon/Rectum Cancer Rate, 1988-2012

VC Age-Adjusted Rate

CA Statewide Age-Adjusted Rate

Linear (VC Age-Adjusted Rate)

Linear (CA Statewide Age-Adjusted Rate)
Invasive Melanoma Cancer Rate, 1988-2012
Risk Factors (Non-Genetic) Associated with Breast Cancer

- Early first menstrual period
- Few or no pregnancies
- Late 1st full-term pregnancy
- Late age at menopause
- Long-term hormone replacement therapy
- Alcohol use
- Obesity
- Exposure to ionizing radiation and chemicals early in life (even fetuses)
- Whites and African-Americans higher risk than Hispanics and Asians
- High socioeconomic status
Invasive Breast (Female) Cancer Incidence by County 2008-2012

VC Rate: 132.8
Total Cases: 2,999
CA Rate: 122.1
Age-adjusted incidence by socio-economic status (females)
Mapping – Breast Cancer Incidence

Age-Adjusted Invasive Cancer Incidence Rates in California
Breast, Female, 2008 - 2012
By County
Age-Adjusted to the 2000 U.S. Standard Population

California Rate: 122.09 / per 100,000

- 103.77 - 112.92
- 113.20 - 121.55
- 122.06 - 132.45
- 132.70 - 143.77

All rates per 100,000.
Data accessed October 26, 2016. Based on November 2014 Extract (Released November 21, 2016).
© 2016 California Cancer Registry.
Breast (Female) Cancer Mortality by County 2009-2013

VC Rate: 21.7
Total Cases: 521
CA Rate: 20.9
Invasive Breast Cancer Rate, 1988-2012
Breast Cancer Mortality Rate, 1988-2013

VC Age-Adjusted Mortality Rate
CA Statewide Age-Adjusted Rate
Linear (VC Age-Adjusted Mortality Rate)
Linear (CA Statewide Age-Adjusted Rate)
Resources Utilized for this Presentation

- American Cancer Society
- California Cancer Registry
- Cancers in the Urban Environment – Dr. Thomas Mack
- National Cancer Institute
- Population-Based Public Health Clinical Manual – The Henry Street Model for Nurses
- State of the Evidence – The Connection Between Breast Cancer and the Environment
- World Health Organization
Questions??

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