Colorectal and Female Breast Cancer in South Dakota
May 19, 2016

Patricia Da Rosa, M.Sc.
Public Health Data Analyst
WHAT IS CANCER?

- A generic term for a large group of diseases that can affect any part of the body.
- The uncontrolled, abnormal growth of cells.
- The cells can invade and damage normal tissue and spread to other parts of the body (Metastases).
- Metastases are the major cause of death from cancer.

Source: The National Cancer Institute
The causes of most cancers remain unknown.

Global variation in cancer incidence and mortality is driven by multiple factors.

More than 30% of cancer could be prevented, mainly by:

- Not using tobacco
- Having a healthy diet (high fruit and vegetable intake)
- Being physically active
- Moderating use of alcohol

For some cancer sites, excess body weight accounts for a large proportion of cases.

Source: THE CANCER ATLAS 2016 American Cancer Society

### Estimated New Cases

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate</td>
<td>180,890</td>
<td></td>
</tr>
<tr>
<td>Lung &amp; bronchus</td>
<td>117,920</td>
<td>106,470</td>
</tr>
<tr>
<td>Colon &amp; rectum</td>
<td>70,820</td>
<td>63,670</td>
</tr>
<tr>
<td>Urinary bladder</td>
<td>58,950</td>
<td>60,050</td>
</tr>
<tr>
<td>Melanoma of the skin</td>
<td>46,870</td>
<td>49,350</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>40,170</td>
<td>32,410</td>
</tr>
<tr>
<td>Kidney &amp; renal pelvis</td>
<td>39,650</td>
<td>29,510</td>
</tr>
<tr>
<td>Oral cavity &amp; pharynx</td>
<td>34,780</td>
<td>26,050</td>
</tr>
<tr>
<td>Leukemia</td>
<td>34,090</td>
<td>25,400</td>
</tr>
<tr>
<td>Liver &amp; intrahepatic bile duct</td>
<td>28,410</td>
<td>23,050</td>
</tr>
<tr>
<td><strong>All Sites</strong></td>
<td><strong>841,390</strong></td>
<td><strong>843,820</strong></td>
</tr>
</tbody>
</table>

### Estimated Deaths

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung &amp; bronchus</td>
<td>85,920</td>
<td>72,160</td>
</tr>
<tr>
<td>Prostate</td>
<td>26,120</td>
<td>40,450</td>
</tr>
<tr>
<td>Colon &amp; rectum</td>
<td>26,020</td>
<td>23,170</td>
</tr>
<tr>
<td>Pancreas</td>
<td>21,450</td>
<td>20,330</td>
</tr>
<tr>
<td>Liver &amp; intrahepatic bile duct</td>
<td>18,280</td>
<td>14,240</td>
</tr>
<tr>
<td>Leukemia</td>
<td>14,130</td>
<td>10,470</td>
</tr>
<tr>
<td>Esophagus</td>
<td>12,720</td>
<td>10,270</td>
</tr>
<tr>
<td>Urinary bladder</td>
<td>11,820</td>
<td>8,890</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>11,520</td>
<td>8,630</td>
</tr>
<tr>
<td>Brain &amp; other nervous system</td>
<td>9,440</td>
<td>6,810</td>
</tr>
<tr>
<td><strong>All Sites</strong></td>
<td><strong>314,290</strong></td>
<td><strong>281,400</strong></td>
</tr>
</tbody>
</table>


*FIGURE 1. Ten Leading Cancer Types for the Estimated New Cancer Cases and Deaths by Sex, United States, 2016.*

Estimates are rounded to the nearest 10 and cases exclude basal cell and squamous cell skin cancers and in situ carcinoma except urinary bladder.
Incidence Rates, 2008-2012
Per 100,000 age adjusted to the 200 US Standard population

US: 461.9
SD: 449.2

Death Rates, 2008-2012
Per 100,000 age adjusted to the 200 US Standard population

US: 171.2
SD: 165.3

All cancer types combined

Data sources: North American Association of Central Cancer Registries (NAACCR), 2015
American Cancer Society 2016
Female Breast Cancer
Female Breast Cancer Burden

- Most common cancer among women worldwide
- In 2012, nearly 1.7 million new cases (2nd most common cancer overall)
- Represents 12% of all cancer cases, 25% of all cancers in women

Estimates for 2016 in SD:
- 680 new cases of breast cancer
- 110 deaths due to breast cancer

BREAST CANCER RISK FACTORS:

- Age: risk increases as a women ages
- Personal or family history (5-10%)
- Inherited mutations (genetic alterations) in BRCA1, BRCA2
- Life time exposure to estrogen:
  - Early menarche/ Late menopause
  - Use of oral contraceptives or estrogen therapy
  - Post-menopausal hormone therapy (PHT)
PROTECTIVE EFFECT

Risk Decreased by:

- Pregnancy at early age
- Breastfeeding for at least one year
- Regular moderate or vigorous physical activity
- Maintaining a healthy body weight
Estimated Breast Cancer Global Incidence in 2012

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.
Trends in Breast Cancer Incidence and Death Rates in US

- Improvements in early detection/treatment
- Avoidance of approximately: 249,000 breast cancer deaths

Trends in incidence rates, 1975-2012
Per 100,000, age adjusted to the 2000 US standard population

Trends in death rates, 1930-2012
Per 100,000, age adjusted to the 2000 US standard population

-36%

Source: SEER Stat Fact Sheets/SD Cancer Registry
5-Year Rate Change - Incidence, South Dakota, 2008-2012, All Ages, Females, All Races (Incl Hisp)

All Cancer Sites
- Esophagus
- Ovary
- Stomach
- Colon & Rectum
- Non-Hodgkin Lymphoma
- Leukemia
- Cervix
- Lung & Bronchus
- Oral Cavity & Pharynx
- Thyroid
- Kidney & Renal Pelvis
- Breast (in situ)
- Uterus

Breast (Female)

Pancreas
Bladder
Brain & ONS
Melanoma of the Skin
Liver & Bile Duct
Prostate

Estimated Annual Percent Change

Key
- Falling
- Rising

Source: Incidence data provided by the National Program of Cancer Registries (NPCR). EAPCs calculated by the National Cancer Institute using SEER*Stat. Rates are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ... 80-84, 85+). Rates are for invasive cancer only (except for bladder cancer which is invasive and in situ) or unless otherwise specified. Population counts for denominators are based on Census populations as modified by NCI. The 1999-2013 US Population Data File is used with NPCR November 2014 data.

Please note that data comes from different sources. Due to different years of data availability, most of the trends are AAPCs based on APCs but some are EAPCs calculated in SEER*Stat. Please refer to the source for each graph for additional information.
Age Specific incidence Rates of Breast Cancer in South Dakota, 2001-2013

Source: SD Cancer Registry
Age Specific Incidence Rate of Female Breast Cancer in South Dakota, by Race, 2001-2013

Source: SD Cancer Registry
Age-Adjusted Incidence and Mortality Rates of Female Breast Cancer in South Dakota, by Race, 2001-2013

Source: SD Cancer Registry

<table>
<thead>
<tr>
<th>New cases</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td></td>
</tr>
<tr>
<td>American Indian</td>
<td></td>
</tr>
<tr>
<td>All Breast Cancer</td>
<td></td>
</tr>
</tbody>
</table>

Rate per 100,000 Females:
- White: 127.5, 21.3
- American Indian: 120.0, 22.2
- All Breast Cancer: 126.7, 21.2

Source: SD Cancer Registry
Female Breast Cancer Stage Distribution, South Dakota, 2009-2013 (N=3847)

Source: SD Cancer Registry
Breast Cancer Age-Adjusted Incidence and Mortality Rates, South Dakota, 2001-2013
Colorectal Cancer
COLORECTAL CANCER

- 3rd most common cancer in men and women
- 2nd leading cause of cancer-related death in US (both sexes)

Estimates for 2016 in SD:
- 390 new cases of colorectal cancer
- 130 deaths due to colorectal cancer
- It is estimated that more than HALF of all cases could be prevented by regular colonoscopy screening!

Source: American Cancer Society www.cancer.org
SD Cancer Registry
Nearly 90% of colon cancer patients are over the age of 50.

Other risk factors include:

- family or personal history of colon cancer or polyps
- chronic inflammatory bowel disease
- hereditary colorectal syndromes
- smoking and heavy alcohol use
- diet high in red meats and low in fiber
- physical inactivity
- being overweight or obese

Source: http://www.cancer.org/cancer/colonandrectumcancer
Trends in Colorectal Cancer Incidence and Death Rates in US

Trends in incidence rates, 1975-2012
Per 100,000, age adjusted to the 2000 US standard population

Trends in death rates, 1930-2012
Per 100,000, age adjusted to the 2000 US standard population

Data Source: Surveillance, Epidemiology, and End Results (SEER) 18 registries, National Cancer Institute, 2015
© 2016 American Cancer Society

Data Source: National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention, 2015
CancerStatisticsCenter.cancer.gov

Improvements in early detection/treatment
Trend in Colorectal Cancer Incidence and Mortality Rates, South Dakota and US, 2001-2013

Source: SEER Stat Fact Sheets/ SD Cancer Registry
Age Specific Incidence Rate of Colorectal Cancer in South Dakota, by Race, 2001-2013

Data source: SD Cancer Registry
Age-Adjusted Incidence and Mortality Rates of Colorectal Cancer in South Dakota, by Race, 2001-2013

Data source: SD Cancer Registry
Colorectal Cancer Stage Distribution, South Dakota, 2009-2013 (N=2267)

Data source: SD Cancer Registry

<table>
<thead>
<tr>
<th>Stage Distribution</th>
<th>White</th>
<th>American Indian</th>
<th>All Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized</td>
<td>39%</td>
<td>30%</td>
<td>47%</td>
</tr>
<tr>
<td>Regional</td>
<td>33%</td>
<td>36%</td>
<td>29%</td>
</tr>
<tr>
<td>Distant</td>
<td>17%</td>
<td>18%</td>
<td>23%</td>
</tr>
<tr>
<td>Unknown</td>
<td>6%</td>
<td>9%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Data source: SD Cancer Registry
Colorectal Cancer Age-Adjusted Incidence and Mortality Rates, South Dakota, 2001-2013
CANCER SCREENING
Decrease in Cervical Cancer Incidence with the Advent of Screening Programs.

Trends in Age-Standardized incidence Rate (World) per 100,000 1953-2002

Canada 1978-2002
USA 1975-2002
Finland 1953-2002
UK, England 1985-2002
Australia 1983-2002

Detecting Cancers Early = Better Prognosis
BREAST CANCER SCREENING

- Test to find cancer early in people who have no symptoms.
- Small cancers and not spread = better chance of cure

Breast cancer screening:

- Clinical Breast Exam (CBE)
- Mammograms (X-ray breast tissue)
- MRI (if needed)
<table>
<thead>
<tr>
<th>Cancer Screening</th>
<th>South Dakota</th>
<th>National Rank</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammography, women 40 years and older, 2014</td>
<td>74.7%</td>
<td>19</td>
<td>72.8%</td>
</tr>
<tr>
<td>Fecal occult blood test (FOBT)/endoscopy, 50 years and older, 2014</td>
<td>67.5%</td>
<td>27</td>
<td>67.6%</td>
</tr>
<tr>
<td>Pap test, women 21 to 65 years, 2014</td>
<td>84.7%</td>
<td>15</td>
<td>82.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cancer Risk Factors</th>
<th>South Dakota</th>
<th>National Rank</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current tobacco use, 18 years and older, 2014</td>
<td>18.6%</td>
<td>24</td>
<td>18.1%</td>
</tr>
<tr>
<td>Overweight prevalence, 18 years and older, 2014</td>
<td>35.4%</td>
<td>25</td>
<td>35.4%</td>
</tr>
<tr>
<td>Obesity prevalence, 18 years and older, 2014</td>
<td>29.8%</td>
<td>23</td>
<td>29.6%</td>
</tr>
<tr>
<td>Overweight or obesity prevalence, 18 years and older, 2014</td>
<td>65.2%</td>
<td>24</td>
<td>64.9%</td>
</tr>
<tr>
<td>Current tobacco use, high school students, 2013</td>
<td>16.5%</td>
<td>9</td>
<td>15.7%</td>
</tr>
</tbody>
</table>

* National rank 1 = highest value

Behavioral Risk Factor Surveillance System American Cancer Society, 2016
All Women Count!

- Breast & Cervical Cancer Screening Program (1997)
- Serves women 30-64 years old (Pap tests) 40-64 (Pap tests and mammograms)
- Eligibility: low income, uninsured (or cannot pay the deductible or co-payment)
- 200 participating provider sites across South Dakota

Screenings/ Diagnosis:

- Number of women enrolled: 24,621
- Clinical Breast Exam: 47,595
- Number of mammograms: 25,993
- Number of abnormals: 3,789
- Invasive breast cancer diagnosed: 231
The U.S. Preventive Services Task Force recommends screening for men and women aged 50–75.

- Fecal occult blood testing (FOBT, yearly)
- Sigmoidoscopy (every 5 years)
- Colonoscopy (every 10 years)

## CANCER SCREENING AND RISK FACTOR PREVALENCE

<table>
<thead>
<tr>
<th>Cancer Screening</th>
<th>South Dakota</th>
<th>National Rank</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammography, women 40 years and older, 2014</td>
<td>74.7%</td>
<td>19</td>
<td>72.8%</td>
</tr>
<tr>
<td>Fecal occult blood test (FOBT)/endoscopy, 50 years and older, 2014</td>
<td>67.5%</td>
<td>27</td>
<td>67.6%</td>
</tr>
<tr>
<td>Pap test, women 21 to 65 years, 2014</td>
<td>84.7%</td>
<td>15</td>
<td>82.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cancer Risk Factors</th>
<th>South Dakota</th>
<th>National Rank</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current tobacco use, 18 years and older, 2014</td>
<td>18.6%</td>
<td>24</td>
<td>18.1%</td>
</tr>
<tr>
<td>Overweight prevalence, 18 years and older, 2014</td>
<td>35.4%</td>
<td>25</td>
<td>35.4%</td>
</tr>
<tr>
<td>Obesity prevalence, 18 years and older, 2014</td>
<td>29.8%</td>
<td>23</td>
<td>29.6%</td>
</tr>
<tr>
<td>Overweight or obesity prevalence, 18 years and older, 2014</td>
<td>65.2%</td>
<td>24</td>
<td>64.9%</td>
</tr>
<tr>
<td>Current tobacco use, high school students, 2013</td>
<td>16.5%</td>
<td>9</td>
<td>15.7%</td>
</tr>
</tbody>
</table>

* National rank 1 = highest value

Behavioral Risk Factor Surveillance System
American Cancer Society, 2016
Summary

Female Breast and Colorectal cancer are among the most common cancers in South Dakota. More than 30% of cancer could be prevented, mainly by:

- Not smoking
- Having a healthy diet (high fruit and vegetable intake)
- Being physically active
- Moderating use of alcohol
- Continue to promote screening (AWC!/ GetScreenedSD)
- Work within health systems to improve physician/patient communication
- Educate about cancer outcomes
MORE INFORMATION

- All Women Count! https://getscreened.sd.gov/count/
- American Cancer Society- www.cancer.org
- Centers For Disease Control and Prevention- http://www.cdc.gov/cancer/breast/statistics/state.htm
- South Dakota Cancer Registry- https://getscreened.sd.gov/registry
THANK YOU!

THIS WORK WAS SUPPORTED BY THE GRANT OR COOPERATIVE AGREEMENT NUMBER DP003943, FUNDED BY THE CENTERS FOR DISEASE CONTROL AND PREVENTION.