Governor Cuomo’s Cancer Research Initiative
Governor Cuomo Announces Statewide Cancer Research Initiative to Enhance Prevention Efforts and Improve Access to Diagnostic Treatment Across New York
Today’s presentation

- Why these studies are being done
- What data will be studied
- Key facts about cancer
- How the four study areas were selected
- Data limitations
- Next steps
- Questions
Purpose of Studies

- Learn more about the patterns of cancer in New York
- Identify any reasons for these patterns
- Enhance prevention and screening efforts
- Support access to appropriate high-quality health care services
General Approach

- Identify counties and areas that have higher cancer rates
- Examine data to detect patterns
- Look at factors such as:
  - Demographic and socioeconomic
  - Behavioral
  - Occupational
  - Environmental
Sources of Data

- New York State Cancer Registry
- Environmental Facilities and Cancer Mapping Application
- Environmental and occupational data sources
- Health care utilization data
- Behavioral data
New York State Cancer Registry

• Mandated by NYS law - hospitals, laboratories, physicians, others provide information to the Department of Health

• Over 100,000 cases of cancer each year

• Information collected includes: information about the cancer (tumor site, stage, cell type, some treatment information), sociodemographic data (age, gender, race, residence, etc.), date and cause of death

• All information is confidential; patients’ privacy is protected

• Registry received Gold-level certification since 1998
Environmental and Occupational Data

• DOH will be working with DEC, and other partners as necessary, to evaluate existing data sources

• Types of data DOH and DEC will be exploring:
  o Air quality monitoring data and emissions information for regulated facilities
  o Pesticide use by certified professional applicators
  o In-home radon levels
  o Hazardous waste/Industrial sites
  o Public drinking water
Behavioral and Health Care Utilization Data

- **Behavioral Risk Factor Surveillance System.** Annual statewide random telephone and cell phone survey designed by the CDC. Monitors risk behaviors and other factors contributing to the leading causes of morbidity and mortality in the population.

- **Medicaid claims data.** Medicaid is the health care program for low-income New Yorkers that covers over 25% of all cancer patients under age 65.

- **Hospitalization data.** Known as SPARCS, this data source contains information on diagnoses and treatments for each hospital inpatient stay and outpatient (ambulatory surgery, emergency department, and outpatient services) visit.
Key Facts About Cancer
Cancer: Background

**What is cancer?**

- Cancer is a group of more than 100 different diseases that begin when abnormal cells in the body grow out of control.
- Normally, cells grow and divide to create new cells as they are needed to keep the body healthy. Sometimes this process of growing new cells does not work properly and cancer forms.
- Different cancers are different diseases.

**How common is cancer?**

- Cancer is a very common disease. One of every two men and one of every three women will be diagnosed with cancer at some time in their life.
- Cancer can occur at any age, but it is most often found in those people middle-aged and older.
Cancer: Background

What causes cancer?

- Different cancers have different causes.
- There are many factors that affect a person's chances of getting different types of cancer.
- Some risk factors can be changed, and others cannot
  - Family history / genetics / race and ethnicity
  - Lifestyle factors: smoking, unhealthy diet, excessive alcohol, physical inactivity
  - Exposures: Ultraviolet radiation from sunlight and indoor tanning devices, x-rays, certain chemicals that may be found in the air, water, food, drugs and workplace.
  - Often multiple interacting factors
Cancer: Background

How soon after exposure to a cancer-causing agent (carcinogen) does cancer appear?

• Most cancers develop slowly in people.
• Cancers usually appear between 5 to 40 years after exposure to a carcinogen.
• Latency = time between first exposure to a cancer-causing agent and the diagnosis of cancer.
• This long latency period is one of the reasons it is difficult to determine what causes cancer in humans.
Cancer Prevention

There are actions you can take to reduce your risk of getting cancer:

• Don't start smoking or quit using tobacco
• Eat healthy
• Limit alcohol use
• Be sun smart
• Avoid tanning salons
• Maintain a healthy weight and get regular exercise
• Know your family history
• Get screened for cancers
• Get the HPV vaccine
Environmental Facilities and Cancer Mapping Application
Environmental Facilities and Cancer Mapping Application


• Shows counts for 23 types of cancer newly diagnosed from 2011 through 2015 by census block group in New York State
• Displays the location of 15 types of environmental facilities
• Highlights 200+ areas of the state where the incidence of cancer is higher or lower than expected
• Highlighted areas were identified using a spatial scan statistic
Interpreting the Cancer Maps

• The cancer maps provide the public with additional information about cancer incidence in New York State.

• The maps need to be interpreted with caution.

• Simply living in an area that is highlighted does not mean a person is more likely to get cancer than someone who does not live in a highlighted area.

• Cancer risk depends on many factors such as age, lifestyle (for example, smoking, diet, physical activity), family history, and contact people have with cancer causing agents (for example, ultraviolet radiation from sunlight, X-rays, tobacco smoke, some chemicals).
### Facility Info

<table>
<thead>
<tr>
<th>Cancer</th>
<th>Cases Observed</th>
<th>Within a Highlighted Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Esophagus</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Kidney</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Average annual populations, 2011-2015**

- Female Population: 467
- Male Population: 466
- Total Population: 933
### 5-Year Cancer Counts in Block Group(s)

<table>
<thead>
<tr>
<th>Cancer</th>
<th>Cases Observed</th>
<th>Within a Highlighted Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ovary</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Pancreas</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Prostate</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

**Average annual populations, 2011-2015**

- Female Population: 1,320
- Male Population: 1,264
- Total Population: 2,584

Map reference # 36001DOH00008
5-Year Cancer Counts in Block Group(s)

<table>
<thead>
<tr>
<th>Cancer</th>
<th>Cases Observed</th>
<th>Within a Highlighted Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leukemias</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Liver</td>
<td>0</td>
<td>Above Expected</td>
</tr>
<tr>
<td>Lung</td>
<td>7</td>
<td>Above Expected</td>
</tr>
</tbody>
</table>

Average annual populations, 2011-2015

- Female Population: 1,320
- Male Population: 1,264
- Total Population: 2,584

Map reference #: 36001DOH0008
Liver Cancer Highlighted Area: Cluster LI-H-24

Five Year Statistics 2011-2015
Cases Observed: 66
Cases Expected: 32.06
Average Population: 81,418
### Populations

<table>
<thead>
<tr>
<th>Female Population</th>
<th>Male Population</th>
<th>Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,320</td>
<td>1,284</td>
<td>2,554</td>
</tr>
</tbody>
</table>

### Cancer Cases

<table>
<thead>
<tr>
<th>Cancer</th>
<th>Cases Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bladder</td>
<td>0</td>
</tr>
<tr>
<td>Bone</td>
<td>0</td>
</tr>
<tr>
<td>Brain</td>
<td>0</td>
</tr>
<tr>
<td>Breast</td>
<td>0</td>
</tr>
<tr>
<td>Colorectal</td>
<td>1</td>
</tr>
<tr>
<td>Esophagus</td>
<td>0</td>
</tr>
<tr>
<td>Kidney</td>
<td>2</td>
</tr>
<tr>
<td>Larynx</td>
<td>0</td>
</tr>
<tr>
<td>Leukemias</td>
<td>2</td>
</tr>
<tr>
<td>Liver</td>
<td>0</td>
</tr>
<tr>
<td>Lung</td>
<td>7</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>0</td>
</tr>
<tr>
<td>Nasal</td>
<td>0</td>
</tr>
<tr>
<td>Non-Hodgkin Lymphoma</td>
<td>4</td>
</tr>
<tr>
<td>Oral</td>
<td>1</td>
</tr>
<tr>
<td>Ovary</td>
<td>1</td>
</tr>
</tbody>
</table>
Study Areas
Selection of Four Study Areas

Warren County: highest overall cancer rate in NY, 2011-2015

Staten Island: highest overall cancer rate among 5 NYC boroughs, 2011-2015

East Side Buffalo/Cheektowaga: where six high clusters overlap (colorectal, esophagus, kidney, lung, oral, prostate)

Centereach, Farmingville, Selden: where four high clusters overlap (bladder, leukemia, lung, thyroid)
Warren County
Age-adjusted Incidence Rate
All Invasive Malignant Tumors
Both Males and Females
New York State, by County
2011-2015

Colors indicate quintiles.
Width of bars indicates 95% confidence intervals.
Warren County

• Highest overall cancer rate of any county in New York, 2011-2015

• 15% above the statewide rate and 10% above the state rate exclusive of New York City

• Elevated sites include larynx (88% above state rate exclusive of New York City), brain (67%), oral (34%), and lung (18%). Case counts are small for some of these sites (for example, 30 laryngeal in 5 years)

• Additional cancers that will be examined include esophagus, colorectal, melanoma, thyroid and leukemia

• Smoking-related cancers are consistently high among males
## Race/ethnicity composition of Warren County, New York State, New York City, and NYS excluding NYC: 2011-2015 ACS Data

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>White</th>
<th>Black</th>
<th>Asian</th>
<th>Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warren County</td>
<td>95%</td>
<td>1%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>New York State</td>
<td>57%</td>
<td>14%</td>
<td>8%</td>
<td>18%</td>
</tr>
<tr>
<td>New York City</td>
<td>33%</td>
<td>22%</td>
<td>13%</td>
<td>29%</td>
</tr>
<tr>
<td>NYS excl. NYC</td>
<td>75%</td>
<td>8%</td>
<td>4%</td>
<td>11%</td>
</tr>
</tbody>
</table>
### Cancer Incidence Rates for Warren County and New York State excluding New York City, 2011-2015

<table>
<thead>
<tr>
<th>Site</th>
<th>Warren</th>
<th>NYS excl NYC</th>
<th>% Diff</th>
<th>Site</th>
<th>Warren</th>
<th>NYS excl NYC</th>
<th>% Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Invasive Malignant Tumors</td>
<td>560.6</td>
<td>511.3</td>
<td>10</td>
<td>Melanoma of the skin</td>
<td>25.7</td>
<td>23.2</td>
<td>11</td>
</tr>
<tr>
<td>Oral cavity and pharynx</td>
<td>15.3</td>
<td>11.4</td>
<td>34</td>
<td>Urinary bladder (incl. in situ)</td>
<td>28.4</td>
<td>27.3</td>
<td>4</td>
</tr>
<tr>
<td>Esophagus</td>
<td>6.7</td>
<td>5.1</td>
<td>31</td>
<td>Kidney and renal pelvis</td>
<td>20.6</td>
<td>18.0</td>
<td>15</td>
</tr>
<tr>
<td>Stomach</td>
<td>7.1</td>
<td>7.3</td>
<td>-3</td>
<td>Brain and ONS</td>
<td>12.0</td>
<td>7.2</td>
<td>67</td>
</tr>
<tr>
<td>Colorectal</td>
<td>43.8</td>
<td>39.6</td>
<td>11</td>
<td>Thyroid</td>
<td>25.5</td>
<td>19.6</td>
<td>30</td>
</tr>
<tr>
<td>Liver / intrahepatic bile duct</td>
<td>5.4</td>
<td>7.1</td>
<td>-24</td>
<td>Hodgkin lymphoma</td>
<td>2.1</td>
<td>3.3</td>
<td>-37</td>
</tr>
<tr>
<td>Pancreas</td>
<td>13.8</td>
<td>14.2</td>
<td>-2</td>
<td>Non-Hodgkin lymphomas</td>
<td>24.5</td>
<td>22.4</td>
<td>10</td>
</tr>
<tr>
<td>Larynx</td>
<td>6.5</td>
<td>3.5</td>
<td>88</td>
<td>Myeloma</td>
<td>9.1</td>
<td>7.5</td>
<td>21</td>
</tr>
<tr>
<td>Lung and bronchus</td>
<td>79.6</td>
<td>67.2</td>
<td>18</td>
<td>Leukemias</td>
<td>21.9</td>
<td>17.9</td>
<td>22</td>
</tr>
</tbody>
</table>

Red: incidence rate for Warren County is statistically higher compared to NYS excluding NYC
All rates on this and subsequent slides are per 100,000 and are age-adjusted to the 2000 US standard population.
### Cancer Incidence Rates for Warren County by Sex, Compared to NYS excluding NYC, 2011-2015

<table>
<thead>
<tr>
<th>Site</th>
<th>Male Warren</th>
<th>% Diff</th>
<th>Female Warren</th>
<th>% Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Invasive Malignant Tumors</td>
<td>610.9</td>
<td>9</td>
<td>525.7</td>
<td>10</td>
</tr>
<tr>
<td>Oral cavity and pharynx</td>
<td>21.8</td>
<td>28</td>
<td>9.0</td>
<td>40</td>
</tr>
<tr>
<td>Esophagus</td>
<td>12.6</td>
<td>44</td>
<td>1.8</td>
<td>-15</td>
</tr>
<tr>
<td>Stomach</td>
<td>11.1</td>
<td>8</td>
<td>3.9</td>
<td>-23</td>
</tr>
<tr>
<td>Colorectal</td>
<td>42.9</td>
<td>-5</td>
<td>43.9</td>
<td>25</td>
</tr>
<tr>
<td>Liver / intrahepatic bile duct</td>
<td>8.5</td>
<td>-23</td>
<td>2.4</td>
<td>-35</td>
</tr>
<tr>
<td>Pancreas</td>
<td>18.3</td>
<td>13</td>
<td>10.7</td>
<td>-15</td>
</tr>
<tr>
<td>Larynx</td>
<td>10.9</td>
<td>81</td>
<td>2.6</td>
<td>93</td>
</tr>
<tr>
<td>Lung and bronchus</td>
<td>92.8</td>
<td>24</td>
<td>68.8</td>
<td>11</td>
</tr>
<tr>
<td>Melanoma of the skin</td>
<td>33.8</td>
<td>16</td>
<td>19.5</td>
<td>3</td>
</tr>
<tr>
<td>Breast</td>
<td></td>
<td></td>
<td>142.5</td>
<td>3</td>
</tr>
<tr>
<td>Cervix Uteri</td>
<td>6.0</td>
<td>-11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Red: incidence rate for Warren County is statistically higher compared to NYS excluding NYC

Green: incidence rate for Warren County is statistically lower compared to NYS excluding NYC
Trends of Overall Cancer Incidence Rate by Sex for Warren County and NYS excluding NYC, 1991-2015

Males

Females


Cancers that will be studied

- Oral cavity and pharynx (Mouth and throat)
- Esophageal
- Lung
- Laryngeal (Larynx)
- Colorectal (Colon and rectal)
- Melanoma
- Thyroid
- Leukemia
- Brain
Avenues of Investigation

• **Socioeconomic and behavioral factors** – Lung, oral, esophageal, and laryngeal cancers are smoking-related. Oral, esophageal, and laryngeal cancers are also related to alcohol use. We will examine data on tobacco and alcohol use and community characteristics correlated with these factors to assess the role of this exposure.

• **Occupational factors** – Certain exposures in the workplace are associated with a greater risk of lung and esophageal cancer. We will review information on occupations or industries where people in the area may have worked.

• **Environmental factors** – Studies have shown higher rates of lung cancer in urban areas or in areas with high levels of air particulates (air pollution). We will explore data on air quality to see whether this area may stand out relative to other areas in the state.
Avenues of Investigation (2)

- **Types of leukemia** – There are four main types of leukemia, with different but overlapping sets of risk factors. We will examine the different types separately to see if any type or types may account for the excess in incidence.

- **Types of brain tumors** – There are different types of brain tumors. We will examine the different types separately to see if any type or types may account for the excess in incidence.
Avenues of Investigation (3)

• Medical care – For thyroid cancer and the chronic types of leukemia, cancers can be diagnosed during tests for other conditions (incidentally). We can examine whether these tests are being done more often in the study area.

• Screening – Early detection of colorectal cancer is an important and effective public health intervention. We will examine how screening rates in Warren County are affecting colorectal cancer rates.
Data limitations

- Aside from smoking, personal behavioral risk factors are not collected by central cancer registries. Registries also collect very limited genetic and occupational data.

- Cancer incidence is measured at the residential address at the time of diagnosis and does not account for residential mobility.

- The magnitude of the cancer elevations in some of the study areas is quite small and may have limited public health relevance.

- Available environmental data are often not directly associated with human exposures.
Next Steps
Study Steps

✓ Study areas identified

✓ Cancer mapping application released

• Seek input from stakeholders and community members

• Adjust approach as needed

• Continue to analyze data and possible contributing factors

• Share results and recommendations by end of 2018
Q&A Session