Background: cigarette smoking is the main cause of lung cancer and increases the risk for oral, esophageal, larynx, and other cancers. Cigarette use has declined dramatically in the U.S. since the 1960s. Cigarette smoking is the main cause of lung cancer and increases the risk for oral, esophageal, larynx, and other cancers. 

Methods: We analyzed data from the NJ State Cancer Registry to calculate age-adjusted incidence rates using SEER*Stat and estimated average annual percent changes and changes in trend by sex and race using joinpoint regression. Results: Lung cancer incidence trends changed significantly among men (p<0.05), decreasing by 0.5% per year from 1979-1991 and by 2.2% from 1991-2013. Similar trends in lung cancer incidence were observed in white and black men. Lung cancer incidence peaked later in women, with a 3.6% increase per year from 1979-1985, a 0.6% increase per year from 1990-2007, and a 4% decrease per year after 2007. Lung cancer incidence started to decline in black women in 1958, which was earlier than white women. Esophageal cancer incidence decreased by 0.4% per year in men, while incidence decreased steadily by 1.1% per year in women from 1979-1993. Esophageal cancer rates were higher in blacks than whites, but the decrease in incidence was more pronounced in blacks. Oropharyngeal cancer incidence declined steadily by 0.6% per year during the period, while the incidence in men decreased by 1.4% per year until 2003, followed by a 0.5% increase per year from 2003-2013. Decreasing trends were also observed with other tobacco-related cancers. Conclusion: Although there is some evidence showing declines in tobacco-related cancer incidence, gender and racial disparities in incidence remain. Lung cancer remains the leading cause of cancer death in N.J, and tobacco use causes substantial morbidity and mortality, emphasizing the importance of smoking prevention and cessation programs.

Objectives

- Characterize changes in the incidence of lung cancer and other tobacco-related cancers in New Jersey
- by primary site
- by gender
- by race and ethnicity

Results: Trends in Incidence of Tobacco-Related Cancers in New Jersey, 1979-2013

- **Rates are per 100,000 and age-adjusted to the 2000 US standard population (19 age groups - Census P25-1130). 2013 data are preliminary.**
- ^Persons of Hispanic ethnicity may be of any race or combination of races. The categories of race and ethnicity are not mutually exclusive.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Cancer Site</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lung and Bronchus</td>
<td>115,172</td>
<td>87,185</td>
</tr>
<tr>
<td></td>
<td>Oral Cavity/Pharynx</td>
<td>21,849</td>
<td>10,864</td>
</tr>
<tr>
<td></td>
<td>Esophageal</td>
<td>11,237</td>
<td>4,075</td>
</tr>
<tr>
<td></td>
<td>All Others*</td>
<td>233,516</td>
<td>190,150</td>
</tr>
</tbody>
</table>

*All other cancers include breast, bone, brain, colon, kidney, liver, melanoma, myeloid leukemia, myelodysplastic syndrome, ovary, pancreas, prostate, rectum, skin nonmelanoma, stomach, thymus, uterus, and uterine cervix.

**Results (2)**

New Jersey Esophageal Cancer Incidence Rates** by Race, 1979-2013

<table>
<thead>
<tr>
<th>Race</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1979-1990</td>
<td>1990-2013</td>
</tr>
</tbody>
</table>

**Note:** Incidence rates prior to 1990 were not calculated for API and Hispanics because the population estimates were not available.

Limitations

- Lack of information on smoking history & smokeless tobacco use
- No individual-level data on other cancer risk factors such as obesity, alcohol consumption, dietary factors, hepatitis B and C virus infection, human papilloma virus (HPV), occupational exposures
- Potential misclassification of race or ethnicity

Strengths

- Population based cancer registry with high-quality data
- Long term follow-up to evaluate cancer incidence trend data (34 years)
- Large numbers of cases and sufficient statistical power

Conclusions

- After declines in cigarette smoking, lung cancer incidence rates decreased in New Jersey, with declines occurring earlier in men than women, although the incidence remains higher in men. This reflects changes in smoking prevalence and the latency period (25 years from first smoker to lung cancer incidence). As U.S. men started to quit in large numbers in the 1950s, earlier than women.
- NJ black men had higher lung cancer incidence than white men, but experienced a larger increase in rates, with rates approaching those in white men by 2013. The decline in lung cancer incidence started earlier in NJ black women than in white women.
- Oral cavity/pharynx cancer incidence declined in NJ women during 1979-2013 and in men until 2003. The increasing use of smokeless tobacco products, especially in men, may play a role in this change in trend in men.
- Esophageal cancer incidence declined in NJ men and women. Esophageal cancer rates were higher in blacks than whites, but the decrease in incidence was more pronounced in blacks.
- The incidence of other smoking-related cancers, such as larynx and bladder cancer, decreased in NJ men and women during 1979-2013.
- In contrast, liver cancer incidence increased significantly in NJ men and women. The role of other liver cancer risk factors should be investigated in future studies.
- Lung cancer remains the leading cause of cancer death in N.J, and tobacco use causes substantial morbidity and mortality, emphasizing the importance of smoking prevention and cessation programs.