Progress in Reducing Lung Cancer Rates in the United States

Ahmedin Jemal, DVM, PhD
National Lung Cancer Roundtable
December 9, 2019, Washington DC
Distribution of cancer deaths in the US, 2017

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>24%</td>
</tr>
<tr>
<td>Colorectum</td>
<td>9%</td>
</tr>
<tr>
<td>Pancreas</td>
<td>7%</td>
</tr>
<tr>
<td>Breast</td>
<td>7%</td>
</tr>
<tr>
<td>Prostate</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>48%</td>
</tr>
</tbody>
</table>

N= 599,099

Source: National Center for Health Statistics
A majority of lung cancer deaths are caused by cigarette smoking

• 85% in men

• 78% in women

Source: Islami et al. Proportion and Number of Cancer Cases and Deaths Attributable to Potentially Modifiable Risk Factors in the United States. CA CANCER J CLIN 2018;68:31–54
Distribution of preventable cancer deaths through modifiable risk factors, ages 30-84 years

- Lung: 50%
- Colorectum: 11%
- Liver: 5%
- Breast: 4%
- Other: 30%

N= 265,210

Male

Death rate per 100,000

Year of death

Female

Death rate per 100,000

Year of death

51%

26%

**Male**

- NH Black
- NH White
- NH American Indian/Alaska Native
- NH Asian/Pacific Islander
- Spanish-Hispanic-Latino

**Female**

- American Indian/Alaska Native
- NH Black
- NH White
- Asian/Pacific Islander
- Spanish-Hispanic-Latino

Men

Women

Note: Estimates are age adjusted to the 2000 standard population.
Trends in lung cancer death rates by educational attainment, ages 25-74 years, 2001-2016

Rate Ratio (RR): ≤12 vs ≥16 years

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>3.0 (2.8-3.1)</td>
<td>4.6 (4.4-4.8)</td>
</tr>
<tr>
<td>Women</td>
<td>2.3 (2.2-2.4)</td>
<td>3.5 (3.3-3.6)</td>
</tr>
</tbody>
</table>

Source: Ma et al. JNCI Spectrum, In Press
Distribution of population and lung cancer deaths by educational attainment, ages 25-74 years, 2016

Population:
- ≤12 years: 32.4%
- 13-15 years: 29.6%
- ≥16 years: 38.0%

193,277,562 people

Lung cancer deaths:
- ≤12 years: 12.0%
- 13-15 years: 22.1%
- ≥16 years: 66.9%

87,343 deaths
Recent lung cancer incidence trend in young women and men
Higher Lung Cancer Incidence in Young Women Than Young Men in the United States

Ahmedin Jemal, D.V.M., Ph.D., Kimberly D. Miller, M.P.H., Jiemin Ma, Ph.D., Rebecca L. Siegel, M.P.H., Stacey A. Fedewa, Ph.D., Farhad Islami, M.D., Ph.D., Susan S. Devesa, Ph.D., and Michael J. Thun, M.D.

ABSTRACT

BACKGROUND

Previous studies showed a higher incidence of lung cancer among young women than among young men in the United States. Whether this pattern has continued in contemporary birth cohorts and, if so, whether it can be fully explained by sex differences in smoking behaviors are unknown.

METHODS

We examined the nationwide population-based incidence of lung cancer according to sex, race or ethnic group, age group (30 to 34, 35 to 39, 40 to 44, 45 to 49, and 50 to 54 years), year of birth (1945 to 1980), and calendar period of diagnosis (1995–1999, 2000–2004, 2005–2009, and 2010–2014), and we calculated female-to-male incidence rate ratios. We also examined the prevalence of cigarette smoking, using data from the National Health Interview Survey from 1970 to 2016.
Trends in 5-year age-specific lung cancer incidence rates by diagnosis year among non-Hispanic white men and women

Updated from Jemal et. al NEJM, 2018
# Trends in 5-year age-specific lung cancer incidence rates by birth cohort among NH white men and women

Updated from Jemal et al NEJM, 2018

<table>
<thead>
<tr>
<th>Cohort Year of Birth</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>1945</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1955</td>
<td></td>
<td></td>
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<tr>
<td>1965</td>
<td></td>
<td></td>
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<tr>
<td>1975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985</td>
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</tbody>
</table>

Incidence rate per 100,000 person-years
Female-to-male incidence rate ratios (IRR) by birth cohort, NH whites

Updated from Jemal et. al NEJM, 2018
Can the higher lung cancer incidence rates in NH-white women than NH-white men born since the 1960s be explained by sex differences in smoking patterns?
Current smoking prevalence by age and birth cohort among NH-white men and women

Men
Women

Current smoking prevalence (%)

Year of birth: 1950-1980
Age groups: 30-34 yrs, 35-39 yrs, 40-44 yrs, 45-49 yrs, 50-54 yrs
Summary

➢ Considerable progress in reducing lung cancer death rates
  ➢ Large disparity by educational attainment and state
  ➢ Opportunities for broad and equitable application of known interventions

➢ Higher lung cancer incidence in women than men born since the mid-1960
  ➢ A higher future burden of overall lung cancer in women than men
  ➢ Etiologic studies
Thank You!

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