Thyroid cancer in the United States: Recent increases

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Background

- Increasing rates of thyroid cancer since 1980’s
- Improved surveillance often cited as cause
  - Increased detection
  - Definition of papillary thyroid cancer expanded in 1988
- However, rates continue to increase in more recent years
- Combined NPCR/SEER dataset allows for detailed analysis, more information
Methods

- **NPCR/SEER combined data, 1999-2007**
  - States meeting USCS criteria for all years
  - 89.4% population coverage
  - Invasive, microscopically confirmed cancers only

- **Incidence rates**
  - Expressed per 100,000 persons
  - Age-adjusted to 2000 US Standard Population
  - Calculated using SEER*Stat 7.0.4
  - 95% Confidence Intervals

- **Annual Percent Change (APC)**
  - Least squares regression

- **Variables**
  - Age, Race, Hispanic ethnicity, Sex, US Census Region
RESULTS: RACE/ETHNICITY
### Average annual incidence rates and counts of thyroid cancer by sex & race/ethnicity, US, 1999-2007

<table>
<thead>
<tr>
<th></th>
<th>Average annual count</th>
<th>Rate per 100,000</th>
<th>95% C.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All cases</strong></td>
<td>23,895</td>
<td>9.14</td>
<td>(9.11, 9.18)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>5771</td>
<td>4.65</td>
<td>(4.61, 4.69)</td>
</tr>
<tr>
<td>Female</td>
<td>18,124</td>
<td>13.51*</td>
<td>(13.45, 13.58)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>20,682</td>
<td>9.47</td>
<td>(9.43, 9.51)</td>
</tr>
<tr>
<td>Black</td>
<td>1543</td>
<td>5.67*</td>
<td>(5.57, 5.76)</td>
</tr>
<tr>
<td>AI/AN</td>
<td>111</td>
<td>4.64*</td>
<td>(4.35, 4.96)</td>
</tr>
<tr>
<td>API</td>
<td>1117</td>
<td>9.38</td>
<td>(9.20, 9.58)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>21,450</td>
<td>9.30</td>
<td>(9.26, 9.35)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2446</td>
<td>8.45*</td>
<td>(8.33, 8.57)</td>
</tr>
</tbody>
</table>

AI/AN=American Indian/Alaska Native  
API=Asian/Pacific Islander  
Data from NPCR/SEER covering 89.4% of US population  
* Indicates statistical significance (p<0.05; top row referent group)
Thyroid cancer trends by race/ethnicity, males, US, 1999-2007

Data from NPCR/SEER covering 89.4% of US population
Hispanic ethnicity and race are not mutually exclusive.

*APC statistically significant (p<0.05).
Thyroid cancer trends by race/ethnicity, females, US, 1999-2007

Data from NPCR/SEER covering 89.4% of US population
Hispanic ethnicity and race are not mutually exclusive.
*APC statistically significant (p<0.05).
RESULTS: AGE
Age-specific incidence rates of thyroid cancer by sex, US, 1999-2007

Data from NPCR/SEER covering 89.4% of US population
Thyroid cancer trends by age, males, US, 1999-2007

Data from NPCR/SEER covering 89.4% of US population

*APC statistically significant (p<0.05).
Thyroid cancer trends by age, females, US, 1999-2007

Data from NPCR/SEER covering 89.4% of US population

*APC statistically significant (p<0.05).
RESULTS: US CENSUS REGION

Data from NPCR/SEER covering 89.4% of US population.

* Indicates statistical significance (p<0.05; Northeast referent group).

Data from NPCR/SEER covering 89.4% of US population

*APC statistically significant (p<0.05).
SUMMARY OF RESULTS

- Rates of thyroid cancer higher:
  - Females
  - White, API
  - Northeast
  - Younger age distribution for women, older for men

- Increases among virtually all groups
CONCLUSION
Conclusions

- Analysis expands previous findings, with greater precision
- Thyroid cancer continuing to increase among nearly all groups
  - Increased diagnosis unlikely to be sole reason for increases
  - Survivors require lifelong thyroid replacement therapy, also at increased risk of other cancers
- Etiologic research needed
Acknowledgements

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