A Look at Oral and Pharyngeal [Head and Neck] Cancer Disparities in Florida and Beyond

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What do we mean by disparities?

• Health disparities (also called healthcare inequality or health inequities) refer to gaps in the quality of health, health outcome, and health care across racial, ethnic, sexual orientation, socioeconomic groups and geographic regions.

• Common definition is "population-specific differences in the presence of disease, health outcomes, or access to health care."
Is there evidence of disparities?

• In the US, health disparities are well documented in minority populations such as African Americans, Native Americans, Asian Americans, and Latinos.

• Among the disease-specific examples of racial and ethnic disparities in the United States is the cancer incidence rate among African Americans, which is 10% higher than among whites.
African Americans (red line) and Whites (blue line)

Survival Probability

Time (months)

Mostly Amenable
Partly Amenable
Non-Amenable

Tehranifar et al Canc Epi Biomarker Prev 2009
Putative Reasons for Cancer Inequities

- Health Literacy
- Access to Preventive Services
- Discretionary Income
- Education
- Life Style
- Population Genetics?
- Geographic Variations [e.g. Availability of Community Services, physical environment]
Oral and Pharyngeal Cancer (OPC)

• Survival from OPC is among the lowest of all cancers.
• An estimated 45,000 new cases of OPC are diagnosed each year.
• Poor prognosis when detected late.
• Treatment for late stage OPC can be disfiguring and costly
OPC

• In Florida, nearly 3,700 new cases of OPC are diagnosed annually, and 1,000 Floridians die each year from OPC.

• We have 9% of new cases of OPC in Florida with 5-6% of total US population.
Healthy People 2020 Goals for Oral Cancer

- Reduce the oral and pharyngeal cancer death rate to 2.3 deaths per 100,000 population
  - State as whole has not met goal and
  - ONLY Seven counties in Florida have met goal

- Increase the percentage of oral and pharyngeal cancers detected at the localized stage to 35.8%
Challenges

• Shame on you disease!
  – Tobacco
  – Alcohol
  – HPV

• What do we call the disease?

• HPV vaccine is effective but encouraging its use for young boys and girls is taboo in some communities and among some groups.
Strategies for Examining OPC Disparities

- What is our current information about Florida?
- For purposes of analysis we separated anatomic sites into oral and pharyngeal.
- Analyzed by race, insurance, geographic region.
- Dependent variables include stage of diagnosis and survival.
- Data source is Florida Cancer Data System
Disparities by Race

- Dependent Variables
  - Stage
  - Survival
Oral cavity by race across time:

Percentage of Late Stage Diagnosis Across Time by Race for Cancer of the Oral Cavity

- Black
- White
Pharyngeal Cancer by Race Across Time:

Percentage of Late Stage Diagnosis Across Time by Race for Cancer of the Pharynx

- Black
- White

Survival Curves by Race and Stage of Diagnosis for Oral Cavity Cancer.

White, local: MST = 42.1 (SE=1.04) brown
Black, local: MST = 32.9 (SE=3.94) red
White, late: MST = 24.2 (SE=0.6) green
Black, late: MST = 17.9 (SE=1.0) blue
Survival Curves by Race and Stage of Diagnosis for Pharyngeal Cancer.

White, local: MST = 33.6 (SE=1.26) brown
Black, local: MST = 29.8 (SE=4.20) red
White, late: MST = 22.8 (SE=0.5) green
Black, late: MST = 18.5 (SE=1.1) blue
Insurance Status

- By race
- By stage of diagnosis
<table>
<thead>
<tr>
<th>Insurance</th>
<th>Race</th>
<th>Ethnicity</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>White</td>
<td>Black</td>
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<tr>
<td>No insurance</td>
<td>7.06%</td>
<td>12.46%</td>
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<tr>
<td>Private</td>
<td>30.64%</td>
<td>19.47%</td>
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<tr>
<td>Medicaid</td>
<td>6.31%</td>
<td>20.74%</td>
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<tr>
<td>Medicare</td>
<td>39.9%</td>
<td>33.01%</td>
</tr>
<tr>
<td>other</td>
<td>16.09%</td>
<td>14.31%</td>
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</table>
Oral SCC by race and insurance type:

Percentage of late stage diagnosis by race and insurance type for oral SCC

- No insurance
- Private
- Medicaid
- Medicare
- Other

Legend:
- Black
- White
Pharyneal SCC by race and insurance type:

Percentage of late stage diagnosis by race and insurance type for pharyngeal SCC

<table>
<thead>
<tr>
<th>Insurance Type</th>
<th>Black</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>No insurance</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>Private</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>Medicaid</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>Medicare</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>Other</td>
<td>70%</td>
<td>70%</td>
</tr>
</tbody>
</table>
Type of Insurance Affects Risk

- Medicare and private insurance are protective against late stage diagnosis.
- The risk of late stage diagnosis was nearly identical for Medicaid and having no insurance for both oral and pharyngeal cancer.
In Short:
The mean survival time for pharyngeal cancer is significantly lower than that for oral cavity cancer.
The racial disparity in stage of diagnosis in oral cavity cancer is larger than that in pharyngeal cancer.
For pharyngeal cancer, both Whites and Blacks are more likely to be diagnosed at the late rather than the localized stage but,

Whites became increasingly more likely to be diagnosed at the late stage for pharyngeal cancer across time. By 2001–2010, Blacks and Whites had comparable rates of late-stage diagnosis for pharyngeal cancer.
• Blacks had poorer survival time than Whites except that, for localized pharynx cancer, Whites and Blacks had comparable survival.
Medicare and private insurance were protective against late stage diagnosis for both oral and pharyngeal cancer. Benefits associated with Medicaid coverage provide no additional protection for late stage diagnosis compared to having no insurance pointing to a clear need for a review of the diagnostics services available.
Disparities by Rural vs. Urban

• What is our current information about disparities by geographic regions?
Florida’s Rural Counties

- **Red**: Rural per 2010 Census (100 persons or less per square mile)
- **Yellow**: Changed from Rural to
- **Black**: Urban as of 2010 Census
Pharyngeal, Late stage
Urban MSE=22.4 months, SE=0.44
Rural MSE=18.7 months, SE=1.42
Test of Equality over Strata, Log-Rank Chi-Square=5.1549 p=0.0232
MSE= Mean survival time in Months.
SE= Standard Error
Pharyngeal, Localized stage
Urban MSE=33.3 months, SE=1.24
Rural MSE=33.5 months, SE=4.88
Test of Equality over Strata, Log-Rank Chi-Square=0.0229 \( p=0.8798 \)
MSE= Mean survival time in Months.
SE= Standard Error
Oral, Late stage
Urban MSE=23.4 months, SE=0.51
Rural MSE=23.4 months, SE=2.35
Test of Equality over Strata, Log-Rank Chi-Square=0.9154 p=0.3387
MSE= Mean survival time in Months.
SE= Standard Error
Oral, Localized stage
Urban MSE=41.3 months, SE=1.02
Rural MSE=45.2 months, SE=4.90
Test of Equality over Strata, Log-Rank Chi-Square=0.4640 p=0.4957
MSE= Mean survival time in Months.
SE= Standard Error
Questions to Ponder?
• What are the contributors to racial disparities in OPC stage of diagnosis and survival?
• What are the contributors to regional differences (rural vs. urban) in survival among late stage pharyngeal diagnosis?
Where and How Do We Intervene?

- Quality of and access to health care: 10%
- Genetics: 20%
- Environment: 20%
- Behavior: 50%