Geographic Variation of Advanced Stage Colorectal Cancer in California

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NAACCR 2016- St. Louis, MO
June 16, 2016
Overview

• Colorectal cancer in California: State perspective

• Colorectal cancer in California: Local perspective
State Perspective: Good News

Colorectal cancer incidence and mortality rates have declined dramatically in California between 1988 through 2013

- Incidence rates declined by 39%
- Mortality rates declined by 42%
The bad news

Despite the availability of highly effective screening tests, over 50% of colorectal cancer cases in California are diagnosed at advanced stage – after the disease has already spread beyond the colon or rectum, and survival rates drop.
Colorectal cancer in California: the local level

• Statewide statistics give an overview of colorectal cancer in California

• How can we help inform more targeted intervention?
- Project initiated by CCR
- Identified Medical Study Service Areas (MSSA) throughout the state with higher than average (52%) advanced stage colorectal cancer
- Goal: Help to inform and assist more targeted colorectal screening interventions.
Patient Selection Criteria:

- Included men and women who were:
  - Residents of California
  - Diagnosed with a cancer of the colon or rectum
  - Diagnosis years: 2007-2011
  - Ages 50+
  - n= 64,364
Community definition: MSSA

- MSSA: geographic unit defined by Office of Statewide Health Planning and Development (OSHPD) for determining medical shortage areas

- MSSAs are “rational service areas for healthcare” or “healthcare communities”

- 542 MSSAs in California based on Census 2010
Methodology

In each MSSA we analyzed:

• Out of all the colorectal cancer cases diagnosed during the five-year period, how many were diagnosed at advanced stage (SEER Summary Stage regional or distant stage)?

• How do those percents and numbers of advanced stage colorectal cancer cases compare to a comparison group?
Methods: the comparison group

- Comparison group included non-Hispanic whites living in high socioeconomic status neighborhoods statewide
- 52% of cases in comparison group were diagnosed at advanced stage
- Selected because it is the demographic group with the lowest percent of advanced-stage colorectal cancer
Analysis

• We compared the proportion of advanced stage cases in each community with the proportion in our comparison group

• We tested to see if the difference was statistically significant
Results: Summary

32 communities: Percent of advanced stage cases significantly higher than the comparison group
    6 communities: ≥70% advanced stage
    11 communities: 65-69% advanced stage
    15 communities: 60-64% advanced stage
408 communities: Percent of advanced stage cases was not significantly different from the comparison group
102 communities: Too few cases to do calculation (< 15 cases in five-years)
OSHPD Data Sources

Proxies of “Access to Care”:

- Health Professional Shortage Areas- Primary Care (HSPA)
  - Primary Care Shortage Area (PCSA)
    - Designated based on primary care physician availability
- Medically Underserved Area (MUA)
  - Designation based upon:
    - % residents below Federal Poverty Level
    - % of population 65+ years
    - Infant mortality rate
    - Population to primary care physician ratio
Advanced stage colorectal cancer in California communities among men and women 50 years and older, 2007-2011

Dark red: 70% or more of cases diagnosed at advanced stage

Dark Orange: 65-69% of cases diagnosed at advanced stage

Orange: 60-64% of cases diagnosed at advanced stage

Beige: % of advanced stage not significantly different from comparison group

White: not calculated (<15 cases in five-year period)
Butte County
Butte County:

MSSA 8: Magalia/Paradise/Stirling City
124 total cases
89 advanced stage
72% advanced stage
Medically Underserved Area

MSSA 10: Oroville/Palermo/Thermalito
100 total cases
67 advanced stage
67% advanced stage
Primary Care Shortage Area
Medically Underserved Area

MSSA 7.1: Chapmantown/Chico
138 total cases
87 advanced stage
63% advanced stage
Yolo County:
MSSA 245: Bryte/ Broderick/Clarksburg/ Riverview/West Sacramento
81 total cases
57 advanced stage cases
70% advanced stage

Primary Care Shortage Area Medically Underserved Area

MSSA 246.1: Woodland
96 total cases
66 advanced stage cases
69% advanced stage
Advanced Stage Colorectal Cancer in Communities of Fresno County Among Adults 50 Years and Older, 2007-2011

Fresno County:
MSSA 29:
Biola/Herndon/
Highway City/Kerman
51 total cases
36 advanced stage
71% advanced stage

Primary Care Shortage Area
Medically Underserved Area
Why do some communities have more cases diagnosed at advanced stage?

These maps tell us where, but not why.

Possible reasons:
- Population characteristics
- Community characteristics
- Chance
Population Characteristics:

Poverty:

MSSA-level:
50% of the communities with the highest proportions of advanced stage colorectal cancer had >=20% of residents living at or below 100% FPL.
Population Characteristics (cont.)

- **Insurance Status (cohort-specific):**

<table>
<thead>
<tr>
<th>Insurance Status</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare with Supplement</td>
<td>32.2</td>
</tr>
<tr>
<td>Private Insurance- Managed Care, HMO, PPO</td>
<td>25.4</td>
</tr>
<tr>
<td>Medicare without Supplement; Medicare, NOS</td>
<td>13.1</td>
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<tr>
<td>Insurance, NOS</td>
<td>6.8</td>
</tr>
<tr>
<td>Medicare with Medicaid eligibility</td>
<td>6.8</td>
</tr>
<tr>
<td>Medicaid</td>
<td>5.3</td>
</tr>
<tr>
<td>Other</td>
<td>10.4</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
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</tbody>
</table>
### Socioeconomic Status (cohort-specific):

<table>
<thead>
<tr>
<th>SES Index</th>
<th>%</th>
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<tbody>
<tr>
<td>High-SES</td>
<td>2.5</td>
</tr>
<tr>
<td>Upper-Middle SES</td>
<td>14.6</td>
</tr>
<tr>
<td>Middle SES</td>
<td>23.6</td>
</tr>
<tr>
<td>Lower-Middle SES</td>
<td>39.1</td>
</tr>
<tr>
<td>Lowest SES</td>
<td>20.2</td>
</tr>
</tbody>
</table>
Community characteristics

- **Physician Availability**
  - 50% of the communities with the highest proportions of advanced colorectal cancer were designated as PCSA’s.
    - Population to Primary Care Physician ratios ranged from:
      - 1,000:1 - 8,900:1

- **Rurality**
  - 50% Rural
  - 50% Urban
External Cancer Control Utilization

- American Cancer Societies “Communities of Focus”
  - Project objective: Recommend specific geographic communities and criteria for prioritizing communities for colorectal cancer interventions.
    - Particular emphasis on Federally Qualifying Health Centers (FQHCs)
- California’s Colorectal Cancer Coalition (C4)
  - Utilized the ACS Communities of Focus report when selecting grant recipients
Summary

• Colorectal cancer incidence and mortality rates have declined, but not equally among all groups.
• More than half of colorectal cancers in California are diagnosed at advanced stage, regardless of race, ethnicity, and socioeconomic status.
• Maps can be used to identify geographic variations in stage distribution and can assist in cancer control efforts.
• Results need to be interpreted in conjunction with local knowledge.
Thank you!

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