Where Are We Now?
The Burden of Colorectal Cancer in California

Janet H. Bates, MD MPH
California Colorectal Cancer Roundtable
Los Angeles, CA
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Overview

• The California Cancer Registry

• Colorectal cancer in California:
  – Incidence – new diagnoses of CRC
  – Mortality – CRC deaths
  – Stage at diagnosis
  – Survival
  – Geographic variations in late stage diagnoses
The California Cancer Registry

• Established by state law passed in 1985
• The CCR has collected information on all new cancer cases and deaths for the entire state of California since 1988
• Hospitals and physicians are required to report cancer cases to the CCR
The California Cancer Registry

• We receive over 200,000 cancer case reports each year
• After weeding out duplicate reports, we end up with about 160,000 new cases added to the database each year
• As of 2012 the CCR database contains over 4 million patient records
Colorectal Cancer in California: the basics

The 3rd most commonly diagnosed cancer among California men and women

14,530 cases expected in 2012

Accounts for 10% of all newly diagnosed cancers

Risk varies by age, sex, and race/ethnicity
Colorectal Cancer in California: Mortality

Colorectal cancer kills more Californians than any other cancer except lung cancer – even though it is one of the most preventable cancers through screening

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>Number of cancer deaths expected in 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>13,045</td>
</tr>
<tr>
<td>Colorectal</td>
<td>5,120</td>
</tr>
<tr>
<td>Breast</td>
<td>4,360</td>
</tr>
<tr>
<td>Prostate</td>
<td>3,085</td>
</tr>
</tbody>
</table>
The good news

Colorectal cancer incidence rates have declined dramatically in California since 1988.

On average, rates have declined by 1.4% per year.

Overall this represents a 29% decrease.
Colorectal Cancer Incidence by Sex, California, 1988-2009
Colorectal Cancer Incidence by Sex, California, 1988-2009
The good news

Colorectal cancer mortality rates have also declined dramatically in California since 1988.

Average rate of decline is 2.2% per year.

This represents an overall decrease in mortality of 38%.
Colorectal Cancer Mortality by Sex, California, 1988-2009

- Age-adjusted rate per 100,000
Colorectal Cancer Mortality by Sex, California, 1988-2009

- All
- Male
- Female

Age-adjusted rate per 100,000

Not-so-good news

Colorectal cancer incidence and mortality rates have declined among all major racial/ethnic groups – but the rate of decline is not equal
Incidence rate declines

<table>
<thead>
<tr>
<th>Racial/ethnic group</th>
<th>Average Annual Percent Change</th>
<th>Statistically Significant?</th>
</tr>
</thead>
<tbody>
<tr>
<td>All races</td>
<td>-1.4%</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>-1.5%</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>-0.8%</td>
<td>Yes</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>-0.7%</td>
<td>Yes</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.3%</td>
<td>No</td>
</tr>
</tbody>
</table>
Colorectal cancer incidence by race/ethnicity, California, 1988-2009

Rate per 100,000

- All Races
Colorectal cancer incidence by race/ethnicity, California, 1988-2009
Colorectal cancer incidence by race/ethnicity, California, 1988-2009
Colorectal cancer incidence by race/ethnicity, California, 1988-2009

Rate per 100,000

- All Races
- African American
- NH White
- Asian/PI
- Hispanic
### Incidence rate declines

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<thead>
<tr>
<th></th>
<th>Average Annual Percent Change</th>
<th>Statistically Significant?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Males</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All races</td>
<td>-1.6%</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>-1.8%</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>-0.8%</td>
<td>Yes</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.5%</td>
<td>No</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>-1.0%</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All races</td>
<td>-1.3%</td>
<td>Yes</td>
</tr>
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The bad news

Despite an overall statewide decline in colorectal cancer rates, colorectal cancer incidence rates are on the rise among some segments of the population.
Colorectal cancer incidence, by age group, California, 1988-2009
Colorectal cancer incidence, by age group, California, 1988-2009
Colorectal cancer incidence, by age group, California, 1988-2009
Trends in age-adjusted colorectal cancer incidence rates among Asian ethnic subgroups, males, California, 1988-2008

*The annual percent change (APC) is significantly different from zero (p < 0.05).
Prepared by the California Department of Public Health, California Cancer Registry
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- Chinese (APC, -1.8%*)
- Japanese (APC, -1.1%*)
- Filipino (APC, 0.3%)

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Trends in age-adjusted colorectal cancer incidence rates among Asian ethnic subgroups, females, California, 1988-2008

Year of Diagnosis

Rate per 100,000


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Prepared by the California Department of Public Health, California Cancer Registry
Trends in age-adjusted colorectal cancer incidence rates among Asian ethnic subgroups, females, California, 1988-2008

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Trends in age-adjusted colorectal cancer incidence rates among Asian ethnic subgroups, females, California, 1988-2008

- Chinese (APC, -0.7%*)
- Japanese (APC, -0.4%)
- Filipino (APC, 1.4%*)
- Vietnamese (APC, 1.0%)
- South Asians (APC, 3.0%*)

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Reference

Summary

• Colorectal cancer rates are declining on average by 1.4% per year
• Rates are declining by 0.5% to 1.6% among men, women, non-Hispanic whites, African Americans; Hispanic women, Asian/PI men
• Rates are stable among Hispanic men and Asian PI women – neither increasing or declining
Summary

Colorectal cancer rates are actually increasing among:

- Persons under age 50
- Korean men and women
- South Asian and Filipino women

Rates among Vietnamese also appear to be increasing
The other bad news

Despite the availability of highly effective screening tests, over 50% of colorectal cancer cases in California are diagnosed late – 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 bring information to communities for local action?
Maps: Background

Goal to identify communities that appear to have an excess of cases diagnosed at advanced stage.

This can be used as an indirect indicator of colorectal cancer screening intensity in that community.
Results

# of communities with high % of advanced cases
# communities with high number of advanced cases
Maps: Background

We looked at colorectal cancer diagnosed in California from 2004-2009 among men and women age 50 years and older (a total of 55,545 cases)
Methods

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

• The analysis was age-adjusted to account for any differences in age distribution between the populations in the community and the benchmark group.

• We tested to see if the difference was statistically significant.
Community definition: Medical Service Study Area (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”

- 541 MSSAs in California based on Census 2000
Methods

In each MSSA we looked at:

• Out of all the colorectal cancer cases diagnosed during the 6-year period, how many were diagnosed at advanced stage (regional or distant stage)?

• How does that % of advanced stage colorectal cancer compare to a benchmark group?
Methods: the benchmark group

• Benchmark group was non-Hispanic whites living in high SES neighborhoods statewide (census data)

• 53% of cases in benchmark group were diagnosed at advanced stage

• We chose this because it is the demographic group with the lowest % of advanced-stage colorectal cancer
Results: Summary

49 communities: % of advanced stage cases significantly higher than the benchmark group
   10 communities: ≥70% advanced stage
   19 communities: 65-69% advanced stage
   20 communities: 60-64% advanced stage
385 communities: % of advanced stage cases was not significantly different from the benchmark group
107 communities: too few cases to do calculation (< 15 cases in 5 years)
Advanced stage colorectal cancer in California communities among men and women age 50 years and older, 2004-2009

Map identifies communities where the proportion of colorectal cancer cases is significantly higher than the state average.
Advanced Stage Colorectal Cancer in Bay Area Communities Among Adults 50 Years and Older, 2004-2009

Medium Purple: 65-69% of cases diagnosed at advanced stage

Light Purple: 60-64% of cases diagnosed at advanced stage

Grey: % of advanced stage cases not significantly different from comparison group

White: not calculated (<15 cases in 5 years)
Advanced Stage Colorectal Cancer in Los Angeles County Among Adults 50 Years and Older, 2004-2009

Medium Purple: 65-69% of cases diagnosed at advanced stage

Light Purple: 60-64% of cases diagnosed at advanced stage

Grey: % of advanced stage cases not significantly different from comparison group

White: not calculated (<15 cases in 5 years)

Source: California Cancer Registry (June 2011)
Advanced stage colorectal cancer in California communities among men and women 50 years and older, 2004-2009

Deep Purple: 70% or more of cases diagnosed at advanced stage

Medium Purple: 65-69% of cases diagnosed at advanced stage

Light Purple: 60-64% of cases diagnosed at advanced stage

Grey: % of advanced stage cases not significantly different from comparison group

White: not calculated (<15 cases in 5 years)
Results: Summary

49 communities: % of advanced stage cases significantly higher than the benchmark group

- 2 communities: 30+ excess advanced cases
- 13 communities: 20.0-29.9 excess advanced cases
- 25 communities: 10.0-19.9 excess advanced cases
- 11 communities: 3.0-9.9 excess advanced cases

385 communities: % of advanced stage cases was not significantly different from the benchmark group

107 communities: too few cases to do calculation (<15 cases in 5 years)
Advanced stage colorectal cancer in California communities among men and women 50 years and older, 2004-2009

Red: 30+ excess late cases
Orange: 20-29 excess late cases
Yellow: 10-19 excess late cases
Grey: % of advanced stage cases not significantly different from comparison group
White: not calculated (<15 cases in 5 years)

Excess late cases = # late cases observed - # late cases expected if MSSA equivalent to benchmark group
Variation in Excess Late Stage Colorectal Cancer Cases in California Communities Among Adults 50 Years and Older, 2004-2009

Top ten

Variation in Advanced Stage Colorectal Cancer in California Communities Among Adults 50 Years and Older, 2004-2009

Top ten

Percent of Colorectal Cancer Cases Diagnosed at Advanced Stage

- >=70% diagnosed advanced stage
- 65-69% diagnosed advanced stage
- 60-64% diagnosed advanced stage
- Not significantly different from comparison group (33% advanced stage)
- Not calculated

Legend:
- 30 or more excess late cases
- 20-29 excess late cases
- 10-19 excess late cases
- Not significantly different from comparison group or <10 excess late cases
- Not calculated
Why do some communities have more cases diagnosed at advanced stage?

These maps tell us where but not why

Possible reasons:

• population characteristics (i.e., poverty, lack of insurance, education level)

• community characteristics (i.e., # of doctors doing screening, rural area with few services)

• chance
Interpreting the maps: cautions

These maps do **not** compare overall colorectal cancer incidence rates by community.

They do **not** suggest any information about underlying causes of colorectal cancer.

They do **not** suggest that communities with no statistically significant excess of advanced stage colorectal cancers should be ignored.

The maps should **not** be used in isolation.

They are the beginning of the discussion – not the end.
Summary

• Colorectal cancer incidence and mortality rates are declining overall in California, but not equally for all race/ethnic groups

• Colorectal cancer rates are increasing among persons under age 50 and among Korean, Filipino, and South Asians

• Earlier stage at diagnosis is associated with much improved chance of survival
Summary

• California Cancer Registry data can be used to identify geographic variations in colorectal cancer outcomes

• Colorectal cancer incidence and mortality rates by year, sex, race/ethnicity, and county are available at:
  www.ccrcal.org
Acknowledgement

- The collection of cancer incidence data used in this study was supported by the California Department of Public Health as part of the statewide cancer reporting program mandated by California Health and Safety Code Section 103885; the National Cancer Institute’s Surveillance, Epidemiology and End Results Program under contract HHSN261201000036C awarded to the Northern California Cancer Center, contract HHSN261201000035C awarded to the University of Southern California, and contract HHSN261201000034C awarded to the Public Health Institute; and the Centers for Disease Control and Prevention’s National Program of Cancer Registries, under agreement #1U58 DP000807-01 awarded to the Public Health Institute.