Quality of Cancer Care Among Foreign-Born and US-Born Patients With Lung Or Colorectal Cancer

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*Disclaimer: The findings and conclusions in this study are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.
Motivation

Study Background

Analysis

Results

Conclusion and Discussion
Disparities in Cancer Care

- Cancer health disparities: differences in the incidence, prevalence, mortality, and burden of cancer and related adverse health conditions that exist among specific population groups in the U.S.
  - Defined by National Cancer Institute

- Disparities in cancer diagnosis, treatment, and survival have been documented for immigrants in U.S.

- Compared with similar race/ethnicity groups who were born in the U.S., foreign born individuals
  - Are diagnosed with cancer at more advanced stages
  - Receive less definitive cancer treatments,
  - Have worse survival once diagnosed

- Past studies involve breast and gastric cancer and involved Asian and Hispanic patients

- Few data were available for lung and colorectal cancer patients
Lung and Colorectal Cancer

- Lung cancer
  - The age-adjusted incidence rate was 62.6 per 100,000 men and women per year
  - The age-adjusted death rate was 50.6 per 100,000 men and women per year
  - As of 01/2009, 387,762 men and women alive who have been diagnosed as lung cancer

- Colorectal (CRC) cancer
  - The age-adjusted incidence rate was 46.3 per 100,000 men and women per year
  - The age-adjusted death rate was 16.7 per 100,000 men and women per year
  - As of 01/2009, 1,140,161 men and women alive who have been diagnosed as lung cancer

- Lung and CRC cancers present the 2 leading causes of cancer mortality in the U.S.

- More statistics can be found in http://seer.cancer.gov/statfacts/
Foreign-born Persons

- Around 38 million in 2007
- 18 million were Hispanic
- 9 million were Asian
CanCORS Project

CanCORS (Cancer Care Outcome Research and Surveillance Consortium)

- Funded by NCI (around 40-50 million dollars over 10 years)
- Study the patterns of lung and CRC cancer care using observational data
  - Build up a large cancer database
  - Allow a variety of research topics (e.g., hospice use, clinical trial enrollment, patient rating)
- Multi-site study
  - 5 geographical sites (Northern California Cancer Center, UAB, UCLA, UIowa, and UNC)
  - 2 provider collections (Cancer research network and Veterans Administration)
- Enroll newly diagnosed 5000 colorectal and 5000 lung cancer patients from 2003-2005
Patients from population-based cohorts in geographic areas

Patients from integrated health-care delivery systems

Patients at Veterans Health Administration hospitals
CanCORS Data Collection

• Patient/surrogate surveys
  – A largely convenience sample
  – Multiple forms: baseline (full, brief, surrogate of live patients, and surrogate of decedents) and follow-up (survivor follow-up and decedent follow-up)
  – Some surveys were translated into Spanish and Chinese (Mandarin and Cantonese) and administered by bilingual interviewers
  – Surveys include questions regarding cancer treatments, ratings of care, health status, and socio-demographic characteristics
  – Response rate around 50%

• Medical records abstractions and cancer registry data include cancer site, stage of disease at diagnosis, and treatment

• Medicare claims were also collected as a supplement

• Provider surveys
Patient-reported quality of care

- In the survey, patients were asked, “Overall, how would you rate the quality of your health care since your diagnosis of [Lung or Colorectal] cancer?”

- Potential responses included: Excellent, very good, good, fair, and poor

- We dichotomize the answers as Excellent vs. Other

- Higher rate of Excellent indicates more satisfaction from patients about the care they have received
  - A subjective measure (i.e., the threshold might differ according to the racial/ethnic/cultural groups)
Receipt of guideline-recommended treatments

- Adjuvant chemotherapy for stage III colon cancer
- Adjuvant chemotherapy and radiotherapy for stage II/III rectal cancer
- Curative surgery for stage I/II non-small cell lung cancer
- Adjuvant: Chemotherapy (radiotherapy) given after removal of a cancerous tumor (surgery) to further help in treatment
- Curative surgery: typically done if the patient is in good health and tumor is thought to be localized and can be removed completely
- Higher rates of receiving these treatments indicate better quality of care
  - Objective measures
Independent Variables

Independent variables: groups of comparison interests

- US-born or foreign-born white
- US-born or foreign-born Hispanic
- US-born or foreign-born Asian
- Among foreign-born individuals, language of survey (English vs. non-English)
  - Language might help explain some of racial disparities
- Control variables: age, sex, marital status, education, household income, comorbidity, health status, survey type, cancer type, stage
  - These variables are held constant when we look at the racial disparities
**Statistical Analyses**

- Variables were obtained from survey, cancer registry, and medical records
- Descriptive statistics: calculate the rates (percentages)
- Multivariate regression models using logistic regression
  - Outcome variable is binary
    * Excellent rating vs. Not
    * Receipt of adjuvant chemotherapy (or other therapies) for stage III colon cancer (or other cancer) vs. Not
  - Main independent variables
    * US-born vs. Foreign-born
    * White vs. Hispanic or Asian
    * Could go to finer groups formed by race-ethnicity and nativity but are limited by sample size in certain cases
  - Control variables include language, age, sex, etc.
Analytic Sample

- The whole CanCORS analytic sample includes 5010 lung and 4703 CRC cancer
- Our study only included patients enrolled from the Northern California and Los Angeles county study sites
  - To control for geographical effect
  - They accounted for the vast majority of foreign-born individuals in CanCORS
  - 2205 U.S. born and 890 foreign born (whites/Hispanics/Asians)
  - Asian patients were most often of Chinese (45%) and Filipino (24%) decent
<table>
<thead>
<tr>
<th>Age Group</th>
<th>White US</th>
<th>White Foreign</th>
<th>Hispanic US</th>
<th>Hispanic Foreign</th>
<th>Asian US</th>
<th>Asian Foreign</th>
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</thead>
<tbody>
<tr>
<td>Total</td>
<td>1870</td>
<td>219</td>
<td>267</td>
<td>323</td>
<td>69</td>
<td>348</td>
</tr>
<tr>
<td>21-54 yr</td>
<td>13%</td>
<td>15%</td>
<td>23%</td>
<td>29%</td>
<td>20%</td>
<td>29%</td>
</tr>
<tr>
<td>55-64 yr</td>
<td>21%</td>
<td>18%</td>
<td>19%</td>
<td>18%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>65-74 yr</td>
<td>29%</td>
<td>22%</td>
<td>29%</td>
<td>25%</td>
<td>16%</td>
<td>30%</td>
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<tr>
<td>&gt;= 75 yr</td>
<td>36%</td>
<td>45%</td>
<td>28%</td>
<td>28%</td>
<td>43%</td>
<td>21%</td>
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<tr>
<td>&lt; High school</td>
<td>11%</td>
<td>11%</td>
<td>36%</td>
<td>56%</td>
<td>6%</td>
<td>21%</td>
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<tr>
<td>High school</td>
<td>27%</td>
<td>28%</td>
<td>30%</td>
<td>19%</td>
<td>20%</td>
<td>18%</td>
</tr>
<tr>
<td>Some college</td>
<td>28%</td>
<td>19%</td>
<td>21%</td>
<td>9%</td>
<td>25%</td>
<td>17%</td>
</tr>
<tr>
<td>College</td>
<td>34%</td>
<td>42%</td>
<td>13%</td>
<td>17%</td>
<td>49%</td>
<td>44%</td>
</tr>
<tr>
<td>&lt; 20K</td>
<td>20%</td>
<td>30%</td>
<td>32%</td>
<td>44%</td>
<td>18%</td>
<td>38%</td>
</tr>
<tr>
<td>20-40K</td>
<td>30%</td>
<td>26%</td>
<td>33%</td>
<td>33%</td>
<td>32%</td>
<td>25%</td>
</tr>
<tr>
<td>40-60K</td>
<td>20%</td>
<td>18%</td>
<td>19%</td>
<td>15%</td>
<td>24%</td>
<td>17%</td>
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<tr>
<td>&gt;=60K</td>
<td>30%</td>
<td>26%</td>
<td>17%</td>
<td>8%</td>
<td>26%</td>
<td>20%</td>
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<tr>
<td>English</td>
<td>100%</td>
<td>100%</td>
<td>96%</td>
<td>38%</td>
<td>91%</td>
<td>64%</td>
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<tr>
<td>Other</td>
<td>0%</td>
<td>0%</td>
<td>4%</td>
<td>62%</td>
<td>9%</td>
<td>36%</td>
</tr>
</tbody>
</table>
Results: Demographics

- Foreign-born Hispanic and Asian patients were younger than foreign-born white patients and US-born groups.
- Asian patients were more often college graduates.
- Hispanic patients were more often in low-income group.
- Many foreign-born Hispanic and Asian patients completed the survey using a language other than English.
Table 2: Distribution of Quality Measures

<table>
<thead>
<tr>
<th></th>
<th>White US</th>
<th>White Foreign</th>
<th>Hispanic US</th>
<th>Hispanic Foreign</th>
<th>Asian US</th>
<th>Asian Foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1870</td>
<td>219</td>
<td>267</td>
<td>323</td>
<td>69</td>
<td>348</td>
</tr>
<tr>
<td>Rated as excellent</td>
<td>52%</td>
<td>45%</td>
<td>43%</td>
<td>39%</td>
<td>38%</td>
<td>27%</td>
</tr>
<tr>
<td>Stage III colon</td>
<td>236</td>
<td>34</td>
<td>48</td>
<td>62</td>
<td>13</td>
<td>54</td>
</tr>
<tr>
<td>Adjuvant chemo</td>
<td>75%</td>
<td>74%</td>
<td>81%</td>
<td>85%</td>
<td>92%</td>
<td>76%</td>
</tr>
<tr>
<td>Stage II/III rectal</td>
<td>82</td>
<td>11</td>
<td>22</td>
<td>20</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>Adjuvant chemo and radio</td>
<td>65%</td>
<td>64%</td>
<td>68%</td>
<td>55%</td>
<td>60%</td>
<td>67%</td>
</tr>
<tr>
<td>Stage I/II non-small cell lung</td>
<td>224</td>
<td>23</td>
<td>11</td>
<td>14</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Surgery</td>
<td>84%</td>
<td>87%</td>
<td>82%</td>
<td>93%</td>
<td>100%</td>
<td>84%</td>
</tr>
</tbody>
</table>
Results: Patients’ Ratings of Quality of Care

- Unadjusted: US-born patients more often reported excellent quality of care compared with foreign-born patients
- Adjusted analyses showed that foreign-born patients were around 20% less likely to report excellent quality of care than US-born patients
- Asian and Hispanic patients were less likely to report excellent quality of care than white patients
  - Asian: around 60% less likely
  - Hispanics: around 23% less likely
- Further adjusting for the language factor
  - Non-English group is around 34% less likely
  - No difference between US and foreign-born
  - No difference between English-speaking Hispanics and Whites
  - Still difference between English-speaking Asian and Whites (around 58% less likely)
Results: Adjuvant Chemo for Stage III Colon Cancer

- Unadjusted: no difference between US and foreign-born
- US-born Asian patients highest (92%) and foreign-born Asian patients lowest (76%)
  - Unable to claim the difference is significant due to small sample size
- No significant differences among comparison groups in adjusted analyses
Results: Adjuvant Chemo and Radio for Stage II/III Rectal

- Unadjusted: no differences
- Adjusted analyses: foreign-born patients are around 65% less likely to receive the treatment than US-born patients
- Further adjusting for language reduced the association, which is no longer significant
Results: Surgery for Stage I/II Nonsmall Cell Lung

No difference detected among comparison groups
Conclusion

- Lower patient ratings of cancer care among foreign-born patients compared with US-born patients
- Lower patient ratings among Hispanic and Asian individuals compared with white patients
- These differences partially explained by English language proficiency
- Lower rates of adjuvant chemotherapy and radiotherapy for stage II/III rectal cancer among foreign-born patients
- Difficult to detect many more differences due to small sample size
- Published by Cancer, 2010, 116, 5497-5506 (for more details)
- More uses of Federal statistical databases for disparities or general quality-of-care research
Discussion

- Racial or ethnic minorities with cancer and other conditions rate their care less favorably than white patients.
- Difference is particularly pronounced among non-English-speaking patients.
- Asian and Hispanic patients have more problems than whites with coordination of care, access to care, and access to health and treatment information.
- Complexity of cancer care: timely information, substantial coordination of cares among multiple specialists, need to navigate the health care system.
- Limited social support and communication difficulties for non-English-speaking patients.
  - If trained interpreters are unavailable and the clinicians do not speak the patients language.
- Issues of language, acculturation, cultural factors.
- Good communication between patients and care providers is crucial.
- Trained medical interpreters and patient navigator programs can help.