Patterns of Care in Colon Cancer (2010-2012)
Florida Cancer Data Compliance with NCCN Guidelines
FCDS Annual Meeting
July 24-25, 2014
Caribe Royale Resort
Orlando, Florida

Background
- NCCN guidelines are referenced extensively
- Cancer conferences
- Recent CER project for FCDS
- Guidelines reviewed regularly
- Provide benchmark for treatment compliance

Literature
- Patterns of care studies done at many levels
- Benchmark study in 2009 by CDC/NPCR
- Examined compliance with chemotherapy guidelines for colon cancer patients
- Results of the study showed variance for compliance based on many factors
The FCDS Experience

- FCDS data analysis for NCCN guideline compliance
- Colon cancer patients for 2010, 2011, and 2012
- Results shared first internally for review and discussion

Goals

- Capture baseline treatment patterns for colon cancer from FCDS data
- Analyze treatment delivered to assess compliance with NCCN guidelines
- Describe treatment by demographic and comorbid status
- Identify areas for targeted quality control review

Methods

- Select 2010, 2011, and 2012 colon cancer cases in FCDS database using defined inclusion criteria
- Separate cases by AJCC group stage
- Analyze each stage group’s cases according to recommended treatment for that stage as defined by NCCN guidelines
- Treatments reviewed included surgery, chemotherapy, and radiation
- Elixhauser comorbidity index created from AHCA
- Computer algorithm developed to process cases
Methods

O Program written in SAS statistical software to group data for analysis using standard NAACCR variables
Data Elements

<table>
<thead>
<tr>
<th>Primary Site</th>
<th>Reason No Radiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Sequence</td>
<td>Chemo Treatment</td>
</tr>
<tr>
<td>Age at Diagnosis</td>
<td>Hormone Treatment</td>
</tr>
<tr>
<td>Diagnosis Date</td>
<td>BRM Therapy</td>
</tr>
<tr>
<td>Morphology ICD03</td>
<td>Regional Nodes Positive</td>
</tr>
<tr>
<td>Behavior ICD03</td>
<td>Regional Nodes Examined</td>
</tr>
<tr>
<td>Surgical Treatment</td>
<td>Surgery Radiation Sequence</td>
</tr>
<tr>
<td>Scope Surgery</td>
<td>Systemic Surgery Sequence</td>
</tr>
<tr>
<td>Reason No Surgery</td>
<td>Derived AJCC Stage 7th ed.</td>
</tr>
<tr>
<td>Radiation Treatment</td>
<td>Comorbidity index</td>
</tr>
</tbody>
</table>

Inclusion Criteria

- Primary site: C18.0, C18.2 - C18.9
- Histology: 8000-8152, 8154-8231, 8243-8245, 8247-8248, 8250-8576, 8940-8950, 8980-8981
- Behavior: 2 and 3
- Diagnosis years: 2010-2012
- Resident of Florida at time of Diagnosis
- AHCA linkage years: 2010 and 2011
- Analytic cases only

Case Distribution

Percentage by Stage

- Colon Cancer

Chart showing case distribution by stage.
Results of treatment compliance with guidelines were analyzed by disease stage.

Detailed analysis of treatment by age group and comorbidities is included for each stage.

Cases where the patient died prior to therapy, patients who had therapy offered but refused therapy, and those cases where therapy was contraindicated, are included in cases meeting guideline criteria.
Findings: Insitu Cancers

Percentage of patients who follow guidelines for surgery

- Unknown: 2, 1, 1, 1
- Does Not Meet: 10, 8, 10, 9
- Meets Guidelines: 88, 91, 89, 90

Findings: Insitu Cancers

Percentage of patients who follow guidelines by Age Group

- <50: 2, 1, 1, 1
- 50-64: 4.35, 9, 7, 13
- 65-74: 94, 90, 92, 86
- >75: 4.35, 9, 7, 13

Stage I

NCCN Guidelines
- Surgery – Resection with 12 or more lymph nodes removed
- NO adjuvant therapy

Findings
- 89% of patients had surgery that followed guidelines
- 62% met guidelines for having 12 or more lymph nodes removed
- Another 25% of patients had 1-11 nodes removed
- Patients with no comorbidities had slightly higher percentage of meeting guidelines both for surgery and for lymph nodes removed
- A higher percentage of younger patients met recommended guidelines for lymph nodes than did older patients
Findings: Stage I
Percentage of patients who follow guidelines for nodes removed by age group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Unknown</th>
<th>&lt;50 y.o.</th>
<th>50-64</th>
<th>65-74</th>
<th>&gt;75</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>No nodes</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1-11 nodes</td>
<td>11</td>
<td>14</td>
<td>10</td>
<td>14</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>&gt;12 nodes</td>
<td>73</td>
<td>64</td>
<td>62</td>
<td>60</td>
<td>62</td>
<td>62</td>
</tr>
</tbody>
</table>

Stage IIA

NCCN Guidelines
- Surgery – resection with 12 or more lymph nodes removed
- Consider chemotherapy especially for high risk features

Findings
- 99% of patients received surgery by recommended guidelines
- 82% had the recommended 12 or more LN removed
- Patients with fewer comorbidities were more likely to have the recommended number of nodes removed
Stage IIB/C

**NCCN Guidelines**
- Surgery – resection with 12 or more lymph nodes removed
- Consider neoadjuvant chemotherapy/XRT as appropriate
- Consider adjuvant chemotherapy/radiation

**Findings**
- 96% received recommended surgery per guidelines
- Only 27% received chemotherapy under recommendation to "consider" chemotherapy
- Of this 27%, 93% received adjuvant chemotherapy

Stage III

**NCCN Guidelines**
- Surgery – resection with 12 or more lymph nodes removed
- Adjuvant chemotherapy

**Findings**
- 99% of patients received surgery as recommended by NCCN guidelines
- Overall 52% of stage III patients have documentation showing compliance with recommended guidelines for chemotherapy administration
- Younger patients (<50 y.o) had higher percentages of chemotherapy administration than older patients (>75 y.o), 68% compared to 38%

Findings: Stage III

Percentage of patients who follow guidelines for chemotherapy by age group:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Does Not Meet</th>
<th>Meets Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50 yrs</td>
<td>25</td>
<td>69</td>
</tr>
<tr>
<td>50-64</td>
<td>21</td>
<td>62</td>
</tr>
<tr>
<td>65-74</td>
<td>34</td>
<td>56</td>
</tr>
<tr>
<td>&gt;75 yrs</td>
<td>54</td>
<td>38</td>
</tr>
<tr>
<td>Average</td>
<td>39</td>
<td>52</td>
</tr>
</tbody>
</table>

| Unknown  | 11           | 13               |
| Unknown  | 15           | 10               |
| Unknown  | 10           | 8                |
| Age      | 9            |                  |

0 20 40 60 80 100
Stage IV

NCCN Guidelines
- Stage IV guidelines contain a selection of treatment options for the patient
  - Surgical resection
  - Chemotherapy – neoadjuvant, adjuvant, or as primary
  - Radiation

Findings
- 49% of stage IV patients received chemotherapy, with 61% of this group receiving adjuvant treatment and 32% having chemotherapy as their primary treatment mode
- 81% of patients did not receive cancer-directed surgery
- There were no clear trends for surgery by comorbid status
- Younger patients had higher percentages both for surgery and for chemotherapy administration

Findings: Stage IV

<table>
<thead>
<tr>
<th>Year</th>
<th>Unknown if Surgery</th>
<th>No Surgery</th>
<th>Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>0</td>
<td>81</td>
<td>19</td>
</tr>
<tr>
<td>2011</td>
<td>1</td>
<td>79</td>
<td>20</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>82</td>
<td>18</td>
</tr>
</tbody>
</table>

Summary
- Compliance with NCCN guidelines varied by stage
- Compliance affected by multiple factors
- Results are impacted by data capture limits
- Future work could use NCCN guidelines as the basis for quality control studies
- Future analysis to include physician reported cases for comparative analysis
References