2009 Site Study
Colorectal Cancer Screening Improves Survival
Susquehanna Cancer Center Experience
2004 – 2008

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Colorectal cancer remains a major public health concern. In the United States overall and in the State of Pennsylvania colorectal cancer is the fourth most commonly diagnosed malignancy but the second leading cause of cancer death.1,2 Established guidelines for early detection and prevention through screening have been published (Appendix 1).3,4 This paper examines the utilization and effects of those guidelines at Susquehanna Health.

Methods

All cases of colorectal cancer recorded in the Susquehanna Cancer Center Tumor Registry between 2004 and 2008 were reviewed. Cases were stratified by diagnosis by screening versus symptoms. Stage at diagnosis and survival were compared.

Results

360 cases of colorectal cancer were recorded in the Susquehanna Cancer Center Tumor Registry between 2004 and 2008. 189 (52%) were male and 171 (48%) were female. The annual average accrual was 72 cases, 38 males and 34 females. There was an average of 26 colorectal cancer deaths per year equally divided by sex. During this period colorectal cancer was the third most commonly observed malignancy behind lung and breast cancer. It was the second most common cause of cancer death trailing only lung cancer.

13% of patients were diagnosed by screening while 87% of patients were symptomatic at diagnosis. AJCC and General Stage by Screened versus Symptomatic are displayed in Tables 1 and 2.

<p>| Table 1 AJCC Stage (%) 2004 - 2008 |
|-----------------|---|---|---|---|---|</p>
<table>
<thead>
<tr>
<th>Stage</th>
<th>0+I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>Unk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screened</td>
<td>42</td>
<td>24</td>
<td>27</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Symptoms</td>
<td>27</td>
<td>24</td>
<td>26</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Overall</td>
<td>28</td>
<td>24</td>
<td>25</td>
<td>14</td>
<td>8</td>
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</table>

<p>| Table 2 General Stage (%) 2004 - 2008 |
|-----------------|---|---|---|---|</p>
<table>
<thead>
<tr>
<th>Stage</th>
<th>Local</th>
<th>Region</th>
<th>Distant</th>
<th>Unk</th>
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</thead>
<tbody>
<tr>
<td>Screen</td>
<td>52</td>
<td>42</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Sympt</td>
<td>35</td>
<td>42</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>Overall</td>
<td>37</td>
<td>42</td>
<td>15</td>
<td>6</td>
</tr>
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</table>

AJCC Stage II & III and Regional disease rates were similar among both screened and symptomatic patients. Stage 0 & I and Localized disease were more frequent among screened patients. A commensurate decrease in Stage IV & Distant disease was observed among screened patients.

The rate of colorectal cancer diagnosis by screening for patients seen at Susquehanna Cancer Center originating from Lycoming County has remained constant over the last 15 years as shown in Table 3.

| Table 3 Annual Lycoming County Colorectal Cancer Diagnosis by Screening |
|-----------------|---|
| 1994 – 1998 | 15% |
| 1999 – 2003 | 15% |
| 2004 – 2008 | 13% |

Among colorectal cancer patients seen at Susquehanna Cancer Center originating
outside Lycoming County the rate of diagnosis by screening was 7%.

Survival stratified by screening versus symptomatic diagnosis is shown in Figure 1.

Overall 5 year mortality was decreased by 44% among those patients diagnosed by screening compared to those recognized when symptomatic.

**Discussion**

Colorectal cancer remains a common cancer diagnosis and cause of death with rates at Susquehanna Cancer Center similar to those reported at State and National levels. Despite well established methods and published guidelines screening remains underutilized.\(^5\)

A Cochrane Library meta-analysis of 4 randomized trials of screening by fecal occult blood testing documented a 16% reduction in colorectal mortality and a shift to earlier stage at diagnosis.\(^6\) A randomized\(^7\) and a retrospective trial\(^8\) of screening by flexible sigmoidoscopy have shown colorectal cancer mortality reductions of 43–60%. No randomized trials of colonoscopy as a screening modality have been performed, but many speculate it would produce even better results. The National Colorectal Polyp study reported a 90% reduction in colorectal cancer incidence.\(^9\)

The shift to earlier stage at diagnosis among our screened patients is compatible with prior reports. Multiple modalities were employed for colorectal screening among our patients. Individual numbers were too small to allow statistical evaluation of specific interventions. Nonetheless, the 44% overall reduction in 5 year mortality among patients diagnosed by screening in this report is well within reported ranges.

The rate of diagnosis of colorectal cancer by screening at Susquehanna Cancer Center has remained constant over a 15 year period of observation. Although the lack of improvement may be disappointing to those involved in activities to promote colorectal cancer screening in our region (Appendix 2), the rate of diagnosis by screening among patients originating in Lycoming County was double that of patients originating from other counties. A comparable external benchmark of colorectal cancer diagnosis rate by screening could not be identified.

Promotion of colorectal cancer screening is an advisable public health policy. Diagnosis of colorectal cancer by screening leads to earlier stage at diagnosis and improved survival. A single optimal screening method has not emerged from the available options. Susquehanna Cancer Center should continue to support professional education and community awareness of this issue.
Appendix 1  Colorectal Cancer Screening Guidelines

ACS Guidelines 2008

- Average Risk
  - Begin at age 50 years
  - Annual FOBT or FIT
  - Flexible Sigmoidoscopy every 5 years
  - Annual FOBT and sigmoidoscopy every 5 years
  - Colonoscopy every 10 years
  - Double Contrast Barium Enema every 5 years
  - CT Colonography every 5 years

- Increased Risk
  - Begin at age 40 years or 10 years before first adenoma/cancer
  - Screen entire colon
  - Genetic counseling for suspected familial syndrome

- Highest Risk
  - FAP
    - Annual Flexible Sigmoidoscopy beginning age 12 years
    - Every 3 years flexible sigmoidoscopy after age 40 years
  - HNPCC
    - Begin at age 20 years
    - Colonoscopy every 1-2 year

USPSTF Guidelines 2008

- Annual FOBT or FIT
- Flexible sigmoidoscopy every 5 years with FOBT every 3 years
- Colonoscopy every 10 years
- Not recommended
  - Stool DNA test
  - Barium enema
  - CT colonography
- No routine screening after 75 years
- No screening at all after 85 years.
<table>
<thead>
<tr>
<th>Year</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>2 Grand Rounds Visiting Professors at Susquehanna Health Compiled and Distributed Tumor Registry Report Task Force Formed: Partnership of ACS and SHS Cancer Center</td>
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<tr>
<td>2002</td>
<td>Susquehanna Health Article ACS-Crosscutters Public Awareness Program Polyp Man Appearances</td>
</tr>
<tr>
<td>2003</td>
<td>Letter/Survey/ACS Guidelines to All Primary Care Physicians Grand Rounds Visiting Professor at SH Polyp Man Appearances</td>
</tr>
<tr>
<td>2004</td>
<td>Sun Gazette Article Worksite Promotions Visit to Senator Madigan re Insurance Reform Presentation to LCHIC Community Awareness Health Care Committee</td>
</tr>
<tr>
<td>2005</td>
<td>Grand Rounds at SH, Local Update of Colorectal Screening ACS Online CME Program Physician Office Materials SH Medical Staff Newsletter Reminders Susquehanna Health Feature EZ Kit Distribution Williamsport Mayor’s Proclamation, Televised Polyp Man Appearances Local Pastor Screened/Community Advocate Call-in Radio Talk Show SH Medical Minute Televised Presentation to Alliance Government Officials</td>
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<td>2010</td>
<td>Grand Rounds at Susquehanna Health Williamsport and Jersey Shore Hospital LCHIC Colorectal Cancer Committee Prepares Grant Application for Public Awareness/Screening Campaign</td>
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Bibliography