Colorectal Cancer Screening Practices Among Nurse Practitioners and Physician Assistants in Texas

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Disclosures

We have no conflicts to disclose
Colorectal Cancer

- Cancer that begins either in the colon or the rectum
- Multiple stages
- Preventable
Stages of Colon cancer

5 year Survival Rates

- Stage O: 80%-95%
- Stage I: 55%-80%
- Stage II: 40%
- Stage III: 12%

Health Problem

• USPSTF recommends colorectal cancer (CRC) screening for adults age 50-75

• ACS (2015) goal “75% of all adults 50 years and older being current on CRC"

• Nationally, only 59% to 65% of those 50 years and older are current on CRC
Colorectal Cancer Screening Algorithm

Men and Women → Symptomatic → Diagnostic Work-up

Asymptomatic

Age < 50 years

Negative Family History

No Screening

HNPPC* or FAP

Genetic Counselling & Special Screening

Age ≥ 50 years

Positive Family History

2 or more first-degree relatives affected* or 1 first-degree relative affected at age < 60 years

Colonoscopy Beginning age 40 years, or 10 years earlier than the youngest diagnosis* in the family, whichever comes first

Negative Family History

Av. Risk Screening**

1 first-degree relative affected at age ≥ 60 years

Average-risk screening, but beginning at age 40 years
<table>
<thead>
<tr>
<th>Screening Test</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Cost</th>
<th>Interval</th>
<th>Follow Up if Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>gFOBT</td>
<td>Variable</td>
<td>Variable</td>
<td>Low</td>
<td>Annual</td>
<td>Colonoscopy</td>
</tr>
<tr>
<td>iFOBT</td>
<td>Variable</td>
<td>Variable</td>
<td>Medium</td>
<td>Annual</td>
<td>Colonoscopy</td>
</tr>
<tr>
<td>sDNA</td>
<td>Variable</td>
<td>High</td>
<td>High</td>
<td>3 years</td>
<td>Colonoscopy</td>
</tr>
<tr>
<td>DCBE</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>5 years</td>
<td>Colonoscopy</td>
</tr>
<tr>
<td>Flex Sig</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>5 Years</td>
<td>Colonoscopy</td>
</tr>
<tr>
<td>Endoscopic Colonoscopy</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>10 Years*</td>
<td>Risk Perforation Bleeding</td>
</tr>
<tr>
<td>Computed Tomographic Colonoscopy</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>5 years</td>
<td>Polyps require Colonoscopy</td>
</tr>
</tbody>
</table>
Health Problem

In 2012, Texas ranked 41st in prevalence of adults aged 50 and older who were current on colorectal (CRC) screening

- Screening rate for Texas 57%
- Less than 55% of Latinos and 56% of African Americans are current on CRC screening
- Less than 40% of people at lower socioeconomic levels are current with CRC screening

(National Cancer Institute, 2014)
(Siegel, R. L., Miller, K. D., & Jemal, A., 2015)
Significance

Colorectal Cancer (CRC)

- Rivals heart disease as #1 killer in ages 40-79
- Third most common cancer diagnosis in U.S.
- Second leading cause cancer death in cancers affecting men and women
- 132,700 new cases CRC 2015
  - Texas 10,050
- 50,000 deaths projected in 2015
  - Texas 3,470

(Siegel, R. L., Miller, K. D., & Jemal, A. 2015)
Significance

Economic Burden of CRC
• 2013
  – direct cost of treating CRC $17 billion
  – 9.8 million work days lost due to hospitalization
By 2020
• Using a trending model
  – Considering decreasing incidence, improved survival, and increasing costs
• $5.19 billion, initial care
• $3.57 billion, continuing care
• $5.27 billion. Last yr life
  – 53% increase in CRC care costs for people 65 years and older under a fixed current incidence model

(Yabroff et al. 2008)
Inconsistencies in CRC screening guidelines (ACS; USPSTF; AGA; ASCO)
   - provider confusion and disagreement with screening guidelines (Schwaiger et al. 2013)

If a is polyp found on a colonoscopy it is no longer screening (Green & Coronado, 2014)

Provider recommendation most powerful determinant of patient uptake and adherence (Power, et al.)

Lack of documentation of 3 generation family history prevents identification of persons at increased risk for CRC (Kelly, 2011)
Reasons for Low CRC Screening Rates

- Lack of time in a busy practice
- Costs to the patient
- Lack of adequate reimbursement
- Lack of a tracking system
- Lack of administrative support
- Demand to see increased numbers of patients
- Patient lack of understanding of the benefits of screening
- Patient non compliance

(Reed, C., & Selleck, C., 1996; Reeve, K., Byrd, T., & Quill, B. E., 2004; Spruce, L. R., & Sanford, J. T., 2012)
Review of Literature

• No previous studies comparing Texas NPs and PAs with regard to CRC screening were found.
Purpose

• Describe the beliefs, attitudes, practices, and knowledge of Texas NPs and PAs with regard to risk stratified colorectal cancer screening in adults.
Figure 3. Project framework: Adapted from Theory of Planned Behavior. From Ajzen, I. (1991). Organizational Behavior and Human Decision Processes 50.179-211.
Design

- Descriptive
- Correlational
- Comparative
Research Questions

1. What are the beliefs, attitudes, and practices, among NPs and PAs with regard to CRC screening in adults?
2. Is there a relationship between provider demographics and CRC screening?
3. Are there differences between NPs and PAs in knowledge of national screening guidelines for adults at varying risk of CRC and their CRC screening behavior?
Data Collection

• Data were collected with a researcher developed, web-based survey using Qualtrics (Version 12018)

• Data were collected from July 24, 2014 through October 21, 2014
Results
# Sample Demographics

<table>
<thead>
<tr>
<th>Characteristics of Sample</th>
<th>NP</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>17 (10.2)</td>
<td>30 (33)</td>
</tr>
<tr>
<td>Female</td>
<td>148 (88.6)</td>
<td>61 (67)</td>
</tr>
<tr>
<td><strong>Race / Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White / Caucasian</td>
<td>122 (73.1)</td>
<td>77 (81.9)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>9 (5.4)</td>
<td>7 (7.4)</td>
</tr>
<tr>
<td>Asian</td>
<td>4 (2.4)</td>
<td>2 (2.1)</td>
</tr>
<tr>
<td>Native American / Alaskan</td>
<td>1 (.6)</td>
<td>0</td>
</tr>
<tr>
<td>Hispanic</td>
<td>25 (15)</td>
<td>8 (8.5)</td>
</tr>
<tr>
<td>Other</td>
<td>4 (2.4)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Average Age</strong></td>
<td>50.74 (SD 10.5)</td>
<td>43.7 (SD 13.7)</td>
</tr>
<tr>
<td><strong>Length of time in practice</strong></td>
<td>M 10 years</td>
<td>M 12 years</td>
</tr>
<tr>
<td><strong>Specialty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Practice</td>
<td>59%</td>
<td>55.3%</td>
</tr>
<tr>
<td><strong>Work Setting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Physician Practice</td>
<td>39%</td>
<td>56.4%</td>
</tr>
</tbody>
</table>

*Numbers reflect missing data

* May represent respondents who gave incomplete responses
<table>
<thead>
<tr>
<th>Specialty</th>
<th>NP n (%)</th>
<th>PA n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Practice</td>
<td>99 (59.3)</td>
<td>52 (55.3)</td>
</tr>
<tr>
<td>Internal medicine</td>
<td>1 (1.4)</td>
<td>9 (9.6)</td>
</tr>
<tr>
<td>Geriatrics</td>
<td>8 (4.8)</td>
<td>0</td>
</tr>
<tr>
<td>Oncology/Hematology</td>
<td>3 (1.8)</td>
<td>6 (6.4)</td>
</tr>
<tr>
<td>Women’s Health</td>
<td>21 (12.6)</td>
<td>1 (1.1)</td>
</tr>
<tr>
<td>*Other</td>
<td>17 (10.2)</td>
<td>26 (27.7)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>167 (100)</td>
<td>94 (100)</td>
</tr>
</tbody>
</table>

*gastroenterology, cardiology, surgery, neurosurgery, endocrinology, urgent care, orthopedics, urology, men's health, nephrology, transplant, infectious disease, radiation oncology, and dermatology*
## Screening Practices

<table>
<thead>
<tr>
<th>NP</th>
<th></th>
<th></th>
<th>PA * N(%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Order Mammogram</td>
<td>148 (88.6)</td>
<td>10 (6)</td>
<td>75 (82.4)</td>
<td>16 (17.6)</td>
</tr>
<tr>
<td>Order Pap</td>
<td>134 (80.2)</td>
<td>27 (16.2)</td>
<td>52 (57.1)</td>
<td>32 (35)</td>
</tr>
<tr>
<td>Order FOBT</td>
<td>125 (74.9)</td>
<td>36 (21)</td>
<td>62 (68.1)</td>
<td>29 (31.9)</td>
</tr>
<tr>
<td>Order Fit</td>
<td>26 (15.6)</td>
<td>135 (80.8)</td>
<td>14 (15.4)</td>
<td>76 (83.5)</td>
</tr>
<tr>
<td>Order Colonoscopy</td>
<td>142 (85)</td>
<td>19 (11.4)</td>
<td>79 (86.8)</td>
<td>12 (13.2)</td>
</tr>
</tbody>
</table>

*Numbers do not equal 100% due to missing and incomplete data*
## Knowledge of CRC Guidelines

<table>
<thead>
<tr>
<th>Knowledge item (correct answer)</th>
<th>Correct Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>†NP n (%)</td>
</tr>
<tr>
<td></td>
<td>†PA n (%)</td>
</tr>
<tr>
<td>*Age to begin CRC screening in average risk adult (50)</td>
<td>126 (88.6%)</td>
</tr>
<tr>
<td>*Evaluation of patient with adenomatous polyp diagnosed &gt;10 years ago (colonoscopy)</td>
<td>157 (94%)</td>
</tr>
<tr>
<td>Lifetime risk Lynch Syndrome associated CRC</td>
<td>147 (18.6%)</td>
</tr>
<tr>
<td>Lifetime risk Lynch associated endometrial cancer (EC)</td>
<td>141 (34.1%)</td>
</tr>
<tr>
<td>*Screening frequency in a patient with Lynch syndrome (every 1-2 years)</td>
<td>151 (18.6%)</td>
</tr>
<tr>
<td>*Age to start colonoscopy in a patient with Lynch syndrome (20-25)</td>
<td>66 (43.7%)</td>
</tr>
<tr>
<td>*Age to begin screening in a patient with two or more first degree relatives of any age or a first degree relative &lt;60 (40)</td>
<td>79 (49.7%)</td>
</tr>
<tr>
<td>Follow up for positive FOBT or FIT (colonoscopy)</td>
<td>157 (94)</td>
</tr>
</tbody>
</table>

- Items included in composite knowledge score
## Knowledge of Hereditary Cancer Syndromes

<table>
<thead>
<tr>
<th>Item</th>
<th>NP n (%)</th>
<th>PA n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtain a three generation family history of cancer</td>
<td>166 (40.1%)</td>
<td>91 (39.6%)</td>
</tr>
<tr>
<td>Confidence in knowledge of hereditary cancer syndromes</td>
<td>167 (60.5%)</td>
<td>91 (57.2%)</td>
</tr>
<tr>
<td>Familiar with Lynch syndrome formerly called HNPCC</td>
<td>166 (43.1%)</td>
<td>91 (65.9%)</td>
</tr>
<tr>
<td>Lifetime risk Lynch associated CRC (60%-80%)</td>
<td>147 (18.6%)</td>
<td>81 (40.7%)</td>
</tr>
<tr>
<td>Lifetime risk Lynch associated EC (40%-60%)</td>
<td>141 (34.1%)</td>
<td>78 (52.8%)</td>
</tr>
<tr>
<td>Positive personal or family history CRC &lt;60 refer to genetic counselling</td>
<td>159 (50.9%)</td>
<td>88 (47.3%)</td>
</tr>
<tr>
<td>Positive personal or family history EC &lt;60 refer to genetic counselling</td>
<td>160 (37.7%)</td>
<td>88 (39.1%)</td>
</tr>
</tbody>
</table>
Results

• An independent samples t-test was conducted to compare NP and PA knowledge of national CRC screening guidelines
NP and PA Knowledge of National Screening Guidelines

There was a significant difference in the scores for NPs (M = 3.09, SD = .96) and PAs (M = 3.44, SD = .85) in knowledge of national CRC screening guidelines for adults at varying risk for CRC t 2.8 (222), p < .005
NP and PA Knowledge of National Screening Guidelines

There was no significant difference between NPs (M = 1.82, SD = .59) and PAs (M = 1.70, SD = .69) in CRC screening behavior t 1.5 (249), p > .05
Relationships of Provider Demographics to CRC Screening

- There was no significant relationship between provider demographics and screening behaviors.

- There was a moderate positive relationship between percent of patients classified as primary care and CRC screening $r = 0.330$, $n = 251$, $p < .01$

- There was a moderate negative relationship between specialty and CRC screening behavior $r = -.410$, $n = 251$, $p < .01$
Relationship between social Norms and Control

• There was no relationship between perceived social norms or perceived behavioral control and CRC screening

• There was a very weak negative relationship between actual control and CRC screening $r = -0.227$, $p < 0.01$
Discussion

• The findings supported the respondents' knowledge of national screening guidelines for breast, cervical, and colorectal cancer in average risk adults.

• Knowledge gaps were identified in both groups as evidenced by the responses to the five vignettes that addressed risk stratified screening for CRC and the responses to questions about Lynch associated cancers.
Discussion

• Only 39.6% of the PAs and 40% of the NPs reported performing a three generation family history.

• The responses revealed a lack of knowledge of the association of CRC and endometrial cancer (EC) diagnosed before the age of 60 with Lynch syndrome.

• The responses revealed knowledge gaps indications for referral to genetic counseling.
Implications for the Future

Increased Demand for Colorectal Cancer Screening
• Aging population (ACS, 2014)
• Doubling of demand for cancer services in next 10 years
• 16-32 million Americans may gain access to care through the Affordable Care Act (Eastman, 2014)

Decreased Physician Supply (Eastman, 2014)
• Primary care workforce (Spruce & Sanford, 2012)
• Oncology workforce (Eastman, 2014)
Conclusion

• NPs and PAs will need to fill the primary care workforce shortage to provide comprehensive cancer screening

• NPs and PAs outside traditional oncology practices will need to assume more comprehensive cancer screening, co-management, and post treatment surveillance

• To do this, NP and PA training programs need to find ways to increase cancer prevention and surveillance content in their curricula

• NPs and PAs could benefit from continuing education in risk stratified CRC screening

Limitations

• Convenience sample TNP & TAPA members
• Small sample size (n = 258)
• Low response rate (7.3%)
• Self-report bias
• Researcher-developed survey
• Results not generalizable beyond Texas
Aknowledgements

• **Project advisor**
  Dr. Barbara Raudonis

• **Clinical advisor**
  Dr. Reni Courtney

• **Statistical Advisors**
  Dr. John Connolly
  Dr. Daisha Cipher
References


References


