



Working together to improve health care quality, outcomes, affordability, and equity  
in Washington State.

## Colorectal Cancer Screening Report and Recommendations

2020

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## Executive Summary

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*Colorectal cancer is the second leading cause of cancer death in the United States and Black Americans are 40% more likely to die from colon cancer than white Americans.<sup>1</sup>*

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Colorectal cancer is common, being the fourth most diagnosed cancer in the United States, after lung, prostate, and breast cancers but is the second leading cause of cancer deaths. Survival rates vary by stage at diagnosis and by race. At five years post-treatment, Black Americans are 40% less likely to survive compared to white Americans. Colorectal cancer screening decreases both the incidence and mortality from colorectal cancer due to finding cancer in earlier stages and by facilitating the removal of precancerous lesions.

The United States Preventive Services Task Force (USPSTF) strongly recommends starting screening for colorectal cancer at age 50 and continuing to age 75, although starting at age 50 is currently under review and may be lowered to 45. Earlier screening is recommended for those at increased risk, such as inflammatory bowel disease, or family history of adenomatous polyp or colorectal cancer at an early age (i.e., under age 60). For those 75 to 85 years, the USPSTF recommends that individuals discuss screening with their clinicians, taking into considering a person's overall health and history of prior screening. Nationally, 68.8% of recommended Americans have received colorectal cancer screening with high variability based on insurance coverage. Within Washington State, 63% of those on commercial insurance and 43% of Medicaid recipients have received the recommended colorectal cancer screening. Colorectal cancer screening is cost effective, lowering overall health care cost relative to those who have not received screening due to avoidance of the high cost of colon cancer treatment.

The workgroup met from January to November 2020 to develop multi-stakeholder recommendations to address the barriers to comprehensive screening including:

- Tracking
- Measurement
- Person-centered care
- Payment

This recommendation and report outlines checklists following these focus areas for delivery organizations, patients and family members, providers, health plans, employers as purchasers of health care access, and Washington state entities including the Health Care Authority, the Department of Health, and the Legislature on pages 5-7. Pages 8-9 summarize published evidence to support the recommendations including further outlining disparities in morbidity and mortality, mechanisms and interventions to increase screening, interventions specific to following up after a positive fecal test, and on sedation during colonoscopy on pages 8-9.

## Dr. Robert Bree Collaborative Background

The Dr. Robert Bree Collaborative was established in 2011 by Washington State House Bill 1311 “...to provide a mechanism through which public and private health care stakeholders can work together to improve quality, health outcomes, and cost effectiveness of care in Washington State.” The Bree Collaborative was named in memory of Dr. Robert Bree, a leader in the imaging field and a key member of previous health care quality improvement collaborative projects.

Members are appointed by the Washington State Governor and include public health care purchasers for Washington State, private health care purchasers (employers and union trusts), health plans, physicians and other health care providers, hospitals, and quality improvement organizations. The Bree Collaborative is charged with identifying health care services annually with substantial variation in practice patterns, high utilization trends in Washington State, or patient safety issues. For each health care service, the Bree Collaborative identifies and recommends best-practice, evidence-based approaches that build upon existing efforts and quality improvement activities to decrease variation. In the bill, the legislature does not authorize agreements among competing health care providers or health carriers as to the price or specific level of reimbursement for health care services. Furthermore, it is not the intent of the legislature to mandate payment or coverage decisions by private health care purchasers or carriers.

See **Appendix A** for a list of current Bree Collaborative members.

Recommendations are sent to the Washington State Health Care Authority for review and approval. The Health Care Authority (HCA) oversees Washington State’s largest health care purchasers, Medicaid and the Public Employees Benefits Board Program, as well as other programs. The HCA uses the recommendations to guide state purchasing for these programs. The Bree Collaborative also strives to develop recommendations to improve patient health, health care service quality, and the affordability of health care for the private sector but does not have the authority to mandate implementation of recommendations.

For more information about the Bree Collaborative, please visit: [www.breecollaborative.org](http://www.breecollaborative.org).

Bree Collaborative members identified colorectal cancer screening as a priority improvement area and convened a workgroup to develop evidence-based standards. The workgroup met from January to November 2020.

See **Appendix B** for the Colorectal Cancer Screening Workgroup Charter and a list of members.

See **Appendix C** for results of the guideline and systematic review search.

## Background

Colorectal cancer is the fourth most common cancer in the United States, after lung, prostate, and breast cancers, with approximately 4.2% of people diagnosed at some point in their lifetime.<sup>1</sup> However, colon cancer is the second leading cause of cancer death in the United States, following lung cancer, in large part due to inadequate screening. This highlights the importance of interventions to increase screening to prevent colon cancer deaths.<sup>2</sup> Colon cancer is much more common in older adults with the rate of diagnosis being 237 per 100,000 people for those 85 years and older while the rate is less than 1 per 100,000 in those 10-14 years.<sup>3</sup>

While screening rates are increasing with almost 69% of adults aged 50-75 reported to be up-to-date for CRC screening in 2018, screening rates are variable by race, insurance status, and income.<sup>4,5</sup> In Washington State, the average CRC screening rate across populations is 58.8%, below the Healthy People goal of 70.5% and the National Colorectal Cancer Roundtable goal of 80%.<sup>6</sup> Nationally, screening rates have been shown to be noticeably lower among the uninsured at 40%, low-income at 58%, American Indian/Alaska Native at 48%, and Hispanic at 56% populations.<sup>5</sup> For each of these groups, the rates fall short of targets in the “80% in Every Community” initiative from the National Colorectal Cancer Round Table. Screening rates for Medicaid-insured adults are low, at 46% compared to 70% for Medicare-insured.<sup>7</sup> Medicaid recipients are 50% more likely to present with late-stage CRC or die from CRC compared to adults with commercial insurance or insurance through Medicare.<sup>8</sup> This disparity affects over 15 million Medicaid-insured adults. In Washington State, disparities are seen between urban and rural counties and by insurance coverage with 59.9% for those residing in an urban county (47% for those with Medicaid insurance compared to 61.5% with commercial insurance) and 53.5% for those residing in a rural county (39.8% for those with Medicaid insurance compared to 55.9% for those with commercial insurance) for an overall average rate for those with Medicaid insurance of 45.6%.<sup>6</sup>

CRC survival rates depend on the stage of cancer at diagnosis, and also by race, socioeconomic status, and insurance coverage; factors that inform one another and also influence a person’s access to screening.<sup>9</sup> Colorectal cancer incidence is higher among those with lower educational levels and among those living in low socioeconomic status neighborhoods.<sup>10</sup> At five years post-treatment, Black Americans are 40% less likely to survive compared to white Americans.<sup>11</sup> Part of this disparity is due to lower screening completion and cancers diagnosed at later stages in Black Americans. Of all people diagnosed with colon cancer, approximately 64.6% survive for five years post diagnosis, increasing to 89.7% if cancer is localized at diagnoses. However, five years post diagnosis survival decreases to 13.8% if cancer is distant and more widespread (metastatic).<sup>8</sup>

Colorectal cancer screening decreases both the incidence and mortality from colorectal cancer due to finding cancer in earlier stages and facilitating the removal of precancerous lesions through direct visualization tests.<sup>12</sup> Nationally, the incidence of colorectal cancer has declined because of increased screening completion and changes in risk factors.<sup>13</sup> Currently, the United States Preventive Services Task Force (USPSTF) strongly recommends to start screening for colorectal cancer at age 50 and continuing

screening to age 75, with risk factors such as a family history indicating earlier screening.<sup>14</sup> The age at which to initiate screening is currently being reviewed and may be lowered to 45. For those 75 to 85 years, the USPSTF recommends that individuals discuss screening with their clinicians, taking into account a person's overall health and history of prior screening.<sup>5</sup> Colorectal cancer screening is also cost effective, lowering overall health care cost for a person receiving screening relative to not receiving screening due to the high cost of treating colon cancer.<sup>15</sup>

There are a variety of CRC screening tests available, with varying levels of evidence to support their use, differing strengths and weaknesses (i.e., risks and benefits), and a range of screening intervals from annual to once every 10 years. Recommended tests are either stool-based or are direct visualization tests that are more invasive, but that offer the opportunity to remove pre-cancerous polyps. Stool-based tests include: annual guaiac-based fecal occult blood test (gFOBT), annual fecal immunochemical testing (FIT), FIT-DNA every one or three years.<sup>5</sup> Direct visualization tests include: colonoscopy every ten years, CT colonography every five years, flexible sigmoidoscopy every five years, flexible sigmoidoscopy every ten years plus annual FIT.<sup>5</sup> When a non-colonoscopy screening test is abnormal, diagnostic colonoscopy must be completed to assess for CRC and to remove any pre-cancerous colorectal polyps. The removal of these polyps is associated with a decreased risk of future CRC.

## Recommendation Framework

The workgroup's goal is to increase appropriate colorectal cancer screening in Washington State in order to decrease the incidence and mortality from colorectal cancer. Focus areas include:

Focus Area	Action Steps
<b>Tracking</b>	<ul style="list-style-type: none"> <li>• Track outcomes and identify disparities in cancer screening and mortality through a comprehensive cancer screening registry including colon, breast, and cervical cancers. The registry will include at minimum screening, screening outcome, and factors that influence screening and outcome including race, ethnicity, and insurance status.               <ul style="list-style-type: none"> <li>○ Short term goal: Individual site-level registry</li> <li>○ Long-term goal: Centralized registry managed by state agency</li> </ul> </li> <li>• Contact colon cancer screening and follow-up outreach including follow-up on abnormal non-colonoscopy screening tests.               <ul style="list-style-type: none"> <li>○ Manage outreach and registry through dedicated role at site level</li> <li>○ Prioritize outreach to populations with historical or demonstrated lower colorectal cancer screening rates including minoritized individuals, those covered by Medicaid, the underinsured, and the uninsured</li> </ul> </li> </ul>
<b>Measurement</b>	<ul style="list-style-type: none"> <li>• Request self-reported race and ethnicity at a site level and report at a health plan level to identify disparities to develop actionable plans to address those disparities</li> <li>• Report screening completion by race and ethnicity by site and health plan</li> <li>• Include measurement of the colorectal cancer screening rate (NQF #0034) for all appropriate populations including for Medicaid</li> <li>• Track positive fecal tests with follow-up colonoscopy</li> </ul>
<b>Person-Centered Care</b>	<ul style="list-style-type: none"> <li>• For patients 50-75, individualize screening modality choice considering overall health, history of prior screening, and risk factors, using shared decision making using language and level of understanding appropriate to the person</li> <li>• For patients electing or who are recommended to have a colonoscopy, offer education around sedation options, including no sedation or sedation on demand</li> </ul>
<b>Payment</b>	<ul style="list-style-type: none"> <li>• Develop a cost calculation worksheet to show the return on investment for colorectal cancer screening</li> <li>• Tie provider payments to showing improvement in colorectal cancer screening rates in state health care purchasing contracts</li> <li>• Waive member cost share for colonoscopy to evaluate an abnormal colorectal cancer screening test (i.e., sigmoidoscopy, stool, blood, imaging screening test), whether polypectomy or biopsy is performed</li> <li>• Waive the member cost share for screening colonoscopy if a polyp is identified and removed in the procedure</li> <li>• Provide funding for patients who are uninsured and income-eligible to have the same access to free colorectal screening and treatment as those with breast and cervical cancer</li> </ul>

## Stakeholder Checklists

### *Delivery Organizations*

- Onsite colorectal cancer screening registry for people aged 45-75 or who are otherwise appropriate for receiving colorectal cancer screening, (registry can include other cancer screening) of the attributed population includes:
  - Age
  - Sex at birth and gender (if available)
  - Race
  - Ethnicity
  - Insurance status
  - Modality selected for screening
  - Screening dates
  - Screening results
  - Follow-up steps
- Registry is used to electronically notify providers during a visit with patients aged 45-75 or who are otherwise due for colorectal cancer screening
- Specific staff person or persons is dedicated to managing registry and outreach
- Outreach occurs to those within attributed population due for cancer screening at appropriate intervals depending on the colorectal cancer screening modality they have selected or that is most appropriate for them
- A mailed FIT program exists for average risk individuals not up-to-date for colorectal cancer screening who are identified through the registry (unless have opted for different modality)
- Abnormal FIT tests are tracked, and patients receive follow-up until colonoscopy is completed or there is adequate documentation in the EHR as to why a colonoscopy was not done
- Prioritize outreach to populations with historical or demonstrated lower colorectal cancer screening rates including:
  - American Indian/Alaska Native
  - African American
  - Hispanic
  - Medicaid
  - Underinsured
  - Uninsured
- Providers are trained or receive access to training on:
  - Indications for colonoscopy including family history and signs and symptoms of presence of colorectal cancer
  - How to have a conversation about selecting the colorectal cancer screening modality using shared decision making for patients aged 50-75 or who are otherwise appropriate
- Patient decision aids on colorectal cancer screening modality selection are reviewed as an organization and make the patient decision aid available to the patient. This may also be done in partnership with a health plan's patient-facing webpage.



**These recommendations not intended to be used in lieu of medical advice.**

***Patients and Family Members***

- Understand your personal family history and risk of colorectal cancer. You can find information from the American Cancer society [here](#) and in **See Appendix D: Colorectal Cancer Risk Assessment Checklist**. If you are high risk, consider screening earlier than age 45 such as age 40
- Understand the signs and symptoms of colorectal cancer and talk to your doctor or care team if you have signs or symptom
  - More information [here](#)
- If you are aged 45 to 75, you should be screened for colorectal cancer using a test that you choose
  - More information [here](#)
- If you are 75 to 85, think about your overall health and wellness-related goals, risks of screening procedures, your personal preferences, and whether you have been screened previously
  - Give your provider(s) information about your values and preferences and discuss options, tradeoffs, and implications of a decision together.
  - Ask about whether a patient decision aid is available.

***Providers***

- Understand the USPSTF cancer screening recommendations by age and risk category and the various options for colon cancer screening
- Understand and utilize the cancer screening registry available in your practice
- Understand factors that increase lifetime risk for or indicate current colorectal cancer including:
  - Symptoms
  - Family history
  - Genetics
- Participate in skills training around shared decision making specific to colorectal cancer screening and/or other cancer screening. This is a learned skill set that is supported by patient decision aids
- Discuss a person's individual risk factors as appropriate during a visit with a patient decision aid as informing a screening modality by appropriate age

***Health Plans***

- Collect data on colorectal cancer screening participation, including demographics such as patient race and ethnicity
- Waive member cost share for colonoscopy to evaluate an abnormal colorectal cancer screening test (i.e., sigmoidoscopy, stool, blood, imaging screening test), whether or not polypectomy or biopsy is performed
- Waive the member cost share for screening colonoscopy if a polyp is identified and removed in the procedure
- Track and report colorectal cancer screening for eligible adults (NQF #0034) and stratify by race including for Medicaid

### ***Employers***

- Incorporate colorectal cancer screening metrics into any value-based contracts (e.g., Centers of Excellence, Accountable Care Organizations)
- Consider education about relevant cancer screenings aligned with the USPSTF recommendations

### ***Washington State Health Care Authority***

- Require Medicaid Managed Care Plans to report on percentage of eligible adults screened for colorectal cancer NQF #0034 and by race and ethnicity
- Certify patient decision aids for colorectal cancer screening

### ***Washington State Department of Health***

- Develop a statewide colorectal cancer screening registry for people aged 45-75 or who are otherwise appropriate for receiving colorectal cancer screening, (registry can include other cancer screening) of the attributed population includes:
  - Patient identifier
  - Age
  - Sex at birth and gender (if available)
  - Race
  - Ethnicity
  - Insurance status
  - Modality selected for screening
  - Screening date
  - Screening result
  - Follow-up steps
- Use data from the registry to compare the rate of colorectal cancer screening, stage at diagnosis, and mortality compared across health plans and delivery systems

### ***Washington State Legislature***

- Mandate health plan reporting on available race and ethnicity data for all quality performance metrics
- Pass legislation to increase colorectal cancer screening including:
  - Requiring health plans to
    - Waive member cost share for colonoscopy to evaluate an abnormal colorectal cancer screening test (i.e., sigmoidoscopy, stool, blood, imaging screening test), whether or not polypectomy or biopsy is performed
    - Waive the member cost share for screening colonoscopy if a polyp is identified and removed in the procedure
  - Allow patients who are income-eligible to have the same access to free screening and treatment as those with breast and cervical cancer

### *Addressing Disparities*

For those who are medically underserved, including racial/ethnic minority groups, individuals in lower socioeconomic groups, and primary non-English speaker, targeted efforts are needed to improve screening and reduce colorectal cancer mortality disparities.<sup>16</sup> For example, in the state of Delaware, targeted efforts to reduce improve colorectal cancer screening between white and Black residents resulted in increasing screening from 48% to 74% among Black residents, mirroring the overall population screening rate post-intervention of 74%.<sup>13</sup>

### *Increasing Colorectal Cancer Screening*

Death from colorectal cancer occurs when screening does not occur, when screening does not occur at the appropriate interval(s), when screening is inaccurate or fails, when surveillance following the identification of an adenoma fails, or when follow-up from a positive screen does not occur.<sup>10</sup> A failure at any one of the points along the screening pathway significantly increases the likelihood of death from colorectal cancer when compared to those who experience adherence to clinical best practice.<sup>9</sup> Of these modifiable failure points in the screening pathway, interventions to increase the initial colorectal cancer screening have been the most well-studied.<sup>4</sup> The most effective interventions are direct mailing of fecal testing to a person's home, as well as patient navigation and especially when coupled with mailed fecal testing.<sup>4,17</sup> Direct mailing of fecal tests to age eligible individuals overdue for colorectal cancer screening increased the percent current for colorectal cancer screening to 51% compared to 26% over usual care and adding navigation to the mailed fecal testing program increased screening uptake to 65%.<sup>18</sup> This finding has been well-documented as mailed FIT outreach has been shown to increase CRC screening by 21.5%.<sup>19</sup> The state of Delaware established a cancer treatment program in 2004 that emphasized colonoscopy and provided a nurse navigator and care coordinator at all five acute care hospital sites and physician communities that increased colorectal cancer screening rates from 57% to 74% overall.<sup>20</sup> While this program cost \$1 million annually, the state saved \$6 million annually in downstream costs.<sup>13</sup>

Among Medicaid recipients, mailed fecal testing from the health plan has been shown to be effective in increasing screening rates, especially if the recipient received a follow-up telephone call.<sup>21,22</sup> One of the most dramatic examples of the benefits of programmatic mailed FIT comes from Kaiser of Northern California, where initiation of mailed FIT in 2006 was associated with a significant increase in screening participation to 83% and an associated 50% decrease in colorectal cancer mortality.<sup>23</sup> Coupling fecal testing with annual flu shots has been moderately effective, but patient education alone and provider education alone have not been shown to be effective at increasing screening rates.<sup>4</sup>

Barriers to these interventions include capacity within health care delivery systems for initiatives, higher cost for initiatives that need dedicated resources, lack of time in the clinical visit, and assuring follow-up for positive tests.<sup>4</sup> The cost to a patient if colorectal screening transitions to a diagnostic procedure, for which co-insurance may be charged, serve as a further disincentive to receipt of any colorectal cancer screening. Estimates of removing this coinsurance in these two cases predict fewer deaths from colorectal cancer (around 13% in the Medicare population) and lower overall cost.<sup>24</sup>

Further, stigma around the colorectal system and fecal matter, the difficulties in preparing for a colonoscopy, and issues with copays being present if a colonoscopy is indicated after a positive fecal test serve as significant barriers.<sup>25</sup> Many researchers and organizations promote the idea that the best test is the one that gets done, acknowledging some patients' preference for the annual fecal test over the more invasive colonoscopy.<sup>11</sup> This is an especially important concept in the era of the COVID-19 pandemic which has been associated with reluctance of many individuals to seek care in medical facilities. FIT is a home-based, non-invasive screening test that only requires travel to a medical facility if the FIT is abnormal (approximately one in 20). Other researchers and public health organizations have successfully maintained high rates of screening by colonoscopy by health navigators educating patients on the advantages of colonoscopy in terms of cancer prevention by polypectomy as well as long term effectiveness (every 10 years rather than annual).<sup>13</sup>

### ***Follow-Up After Positive Fecal Test***

While annual FIT screening can identify most patients at risk for colorectal cancer, the effectiveness depends upon adherence with diagnostic colonoscopy after an abnormal FIT result. Unfortunately, many individuals with an abnormal FIT fail to undergo colonoscopy and a delay in colonoscopy is associated with an increased risk of late stage cancer.<sup>26</sup> In one safety-net system, factors associated with higher rates of colonoscopy completion included having a registry to track abnormal FIT results and colonoscopy completion, having at least two staff members tasked with communicating abnormal FIT results to the patient, and having those staff members include a nurse and medical assistant were associated with higher rates of follow-up after a positive FIT.<sup>27</sup> A recent systematic review of interventions to improve abnormal FIT follow-up concluded there was evidence of moderate strength for patient navigation and provider reminders/provider feedback as strategies for increasing colonoscopy completion.<sup>28</sup> Another meta-analysis was unable to determine the overall effectiveness of any intervention to improve abnormal FIT follow-up because of the low number of available studies.<sup>17</sup> Overall, interventions to improve colonoscopy completion after an abnormal fecal test are less well studied than initial screening and although moderate evidence for provider-based and navigator-based interventions for abnormal FIT follow-up exist, the widespread use of these strategies is limited by the personnel costs associated with one-on-one navigation.

### ***Sedation During Colonoscopy***

Most patients undergoing colonoscopy receive sedation to help minimize discomfort and anxiety, though unsedated colonoscopy is commonplace in much of the world.<sup>29</sup> In the United States, intravenous sedation with a narcotic (e.g., fentanyl) in combination with a benzodiazepine (e.g., midazolam) under the direction of the colonoscopy provider had been the most common type of sedation used during colonoscopy. However, there has been a relatively recent dramatic increase in the use of monitored anesthesia care (MAC) during colonoscopy, typically involving use of intravenous Propofol.<sup>30</sup> While MAC sedation with Propofol is associated with a small but significant increase in patient satisfaction, there is increasing evidence of an increased risk of significant complications compared to moderate sedation.<sup>31,32</sup>

Sedation options include from no sedation to conscious/moderate sedation or general anesthesia. Most patients receive conscious/moderate sedation during colonoscopy. Moderate sedation typically consists of midazolam for sedation and fentanyl for analgesia (pain control).<sup>33</sup> Some studies have shown that patients prefer deep sedation.<sup>34</sup> Approximately 34.4% of colonoscopies nationally use anesthesia services (ranging from 53% to 8% in the Western region). General anesthesia is associated with an increased risk of complications within 30 days of the procedure and with increased risk of perforation, hemorrhage, abdominal pain, and stroke.<sup>35</sup>

The use of MAC sedation is also associated with a significant increase in the cost of colonoscopy.<sup>23</sup> Recommendations from a multidisciplinary group prioritizing patient safety around sedation were that all endoscopists be able to perform colonoscopy with moderate sedation, that an endoscopist and a single trained nurse are sufficient for performing colonoscopy with moderate sedation, and that anesthesia- provided deep sedation be used only for select patients.<sup>36</sup>

## Measurement

Options for tracking colorectal cancer screening are below including those aligning with value-based reimbursement models from the Bree Collaborative and Federal programs:

**NQF #0034 Colorectal Cancer Screening**

DESCRIPTION: Percentage of patients 50-75 years of age who had appropriate screening for colorectal cancer

NUMERATOR: Patients with one or more screenings for colorectal cancer. Appropriate screenings are defined by any one of the following criteria:

- Fecal occult blood test (FOBT) during the measurement period
- Flexible sigmoidoscopy during the measurement period or the four years prior to the measurement period
- Colonoscopy during the measurement period or the nine years prior to the measurement period
- Computed tomography (CT) colonography during the measurement period or the four years prior to the measurement period
- Fecal immunochemical DNA test (FIT-DNA) during the measurement period or the two years prior to the measurement period

DEMONINATOR (Eligible Cases):

- Patients 50 to 75 years of age on date of encounter
- Patient encounter during the performance period (CPT or HCPCS): 99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215, 99341, 99342, 99343, 99344, 99345, 99347, 99348, 99349, 99350, 99386\*, 99387\*, 99396\*, 99397\*, G0402, G0438, G0439

More information: [https://www.ncqa.org/hedis/measures/colorectal-cancer-screening/#:~:text=Colorectal%20Cancer%20Screening%20\(COL\),DNA%20test%20every%203%20years.](https://www.ncqa.org/hedis/measures/colorectal-cancer-screening/#:~:text=Colorectal%20Cancer%20Screening%20(COL),DNA%20test%20every%203%20years.)

**New Measure Follow-up colonoscopy after an abnormal fecal test**

DESCRIPTION: Percentage of patients 50-75 years of age with a positive fecal test receiving a follow-up colonoscopy within 12 months

NUMERATOR: Patients 50 – 75 years of age with a positive fecal test including:

- Fecal occult blood test (FOBT) 82274
- Fecal immunochemical DNA test (FIT-DNA) during the measurement period

AND

- Colonoscopy in the following 12 months

DEMONINATOR (Eligible Cases):

- Patients 50 to 75 years of age on date of encounter with a positive fecal test including:
  - Fecal occult blood test (FOBT) 82274
  - Fecal immunochemical DNA test (FIT-DNA) during the measurement period

## Appendix A: Bree Collaborative Members

Member	Title	Organization
Susie Dade, MS		
Gary Franklin, MD, MPH	Medical Director	Washington State Department of Labor and Industries
Stuart Freed, MD	Chief Medical Officer	Confluence Health
Richard Goss, MD	Medical Director	Harborview Medical Center – University of Washington
Darcy Jaffe, MN, ARNP, NE-BC, FACHE	Senior Vice President, Safety & Quality	Washington State Hospital Association
Sonja Kellen	Global Benefits Director	Microsoft
Dan Kent, MD	Chief Medical Officer, Community Plan	UnitedHealthcare
Wm. Richard Ludwig, MD	Chief Medical Officer, Accountable Care Organization	Providence Health and Services
Greg Marchand	Director, Benefits & Policy and Strategy	The Boeing Company
Robert Mecklenburg, MD	Medical Director, Center for Health Care Solutions	Virginia Mason Medical Center
Kimberly Moore, MD	Associate Chief Medical Officer	Franciscan Health System
Carl Olden, MD	Family Physician	Pacific Crest Family Medicine, Yakima
Drew Oliveira, MD	Executive Medical Director	Regence BlueShield
Mary Kay O’Neill, MD, MBA	Partner	Mercer
John Robinson, MD, SM	Chief Medical Officer	First Choice Health
Jeanne Rupert, DO, PhD	Provider	One Medical
Angela Sparks, MD	Medical Director Clinical Knowledge Development & Support	Kaiser Permanente Washington
Hugh Straley, MD (Chair)	Retired	Medical Director, Group Health Cooperative; President, Group Health Physicians
Shawn West, MD		
Laura Kate Zaichkin, MPH	Director of Health Plan Performance and Strategy	SEIU 775 Benefits Group
Judy Zerzan, MD, MPH	Chief Medical Officer	Washington State Health Care Authority

## Appendix B: Colorectal Cancer Screening Charter and Roster

### Problem Statement

Colorectal cancer is the fourth most common cancer diagnosed in the United States with about 4.2% of men and women being diagnosed at some point in their lifetime.<sup>37</sup> Currently, the US Preventive Services Task Force recommends to start screening for colorectal cancer at age 50, with some risk factors such as a family history indicating earlier screening.<sup>38</sup> In Washington State of adults aged 50-75, only 63% with commercial insurance and 43% with Medicaid received screening, with variation by county.<sup>39</sup>

### Aim

To increase appropriate colorectal cancer screening in Washington State to decrease incidence of and mortality from colorectal cancer.

### Purpose

To propose evidence-based recommendations to the full Bree Collaborative on:

- Mechanisms to increase appropriate use of colorectal cancer screening including follow-up after a positive stool test
- Reviewing existing guidelines by age and other relevant factors to begin and end screening, including risk factors that indicate earlier screening or need for further diagnostic test
- Appropriate colorectal cancer screening modalities
- Informed decision making around anesthesia during screening, including no anesthesia
- Addressing disparities in colorectal cancer screening rates (e.g., geographic, by race, by payer)

### Duties & Functions

The Colorectal Cancer Screening workgroup will:

- Research evidence-based and expert-opinion informed guidelines and best practices (emerging and established).
- Consult relevant professional associations and other stakeholder organizations and subject matter experts for feedback, as appropriate.
- Meet for approximately ten-twelve months, as needed.
- Provide updates at Bree Collaborative meetings.
- Post draft report(s) on the Bree Collaborative website for public comment prior to sending report to the Bree Collaborative for approval and adoption.
- Present findings and recommendations in a report.
- Recommend data-driven and practical implementation strategies including metrics or a process for measurement.
- Create and oversee subsequent subgroups to help carry out the work, as needed.
- Revise this charter as necessary based on scope of work.



## Structure

The workgroup will consist of individuals confirmed by Bree Collaborative members or appointed by the chair of the Bree Collaborative or the workgroup chair. The chair of the workgroup will be appointed by the chair of the Bree Collaborative. The Bree Collaborative director and program assistant will staff and provide management and support services for the workgroup.

Less than the full workgroup may convene to: gather and discuss information; conduct research; analyze relevant issues and facts; or draft recommendations for the deliberation of the full workgroup. A quorum shall be a simple majority and shall be required to accept and approve recommendations to send to the Bree Collaborative.

## Meetings

The workgroup will hold meetings as necessary. The director will conduct meetings along with the chair, arrange for the recording of each meeting, and distribute meeting agendas and other materials prior to each meeting. Additional workgroup members may be added at the discretion of the workgroup chair.

Name	Title	Organization
Rick Ludwig, MD	Chief Executive Officer	Pacific Medical Centers
Patricia Auerbach, MD, MBA, FACP	Chief Medical Officer, Washington, Oregon, and Idaho, Employer & Individual, Medicare & Retirement	UnitedHealthcare
Elizabeth Broussard, MD	Gastroenterology	Pacific Medical Centers First Hill
Jason Dominitz, MD, MHS	National Program Director, Gastroenterology	Veterans Health Administration
John Dunn, MD	Medical Director of Prevention	Kaiser Permanente Washington
Casey Eastman, MPH	Content Lead, Breast, Cervical, Colon Health Program	Washington State Department of Health
Bev Green, MD, MPH	Senior Investigator, Family Physician	Kaiser Permanente Washington
John Inadomi, MD	Gastroenterology	University of Washington Medicine
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## Appendix C: Guideline and Systematic Review Search Results

<i>Year</i>	<i>Title</i>	<i>Summary or Findings</i>
<p><i>AHRQ: Research Findings and Reports</i></p>	<p>2019 <a href="#">Achieving Health Equity in Preventive Services</a></p>	<p>No eligible studies evaluated effects of provider-specific barriers; 18 studies of population barriers provided low or insufficient evidence regarding insurance coverage, access, age, rural location, low income, language, low health literacy, country of origin, and attitudes. In 12 studies of clinician interventions, screening was higher for colorectal cancer with patient navigation, risk assessment and counseling, educational materials, and decision aids; breast and cervical cancer with reminders involving lay health workers; and cervical cancer with outreach and health education. Clinician-delivered interventions were effective for smoking cessation and weight loss. In 11 studies of health information technologies, automated reminders and electronic decision aids increased colorectal cancer screening, and web- or telephone-based self-monitoring improved weight loss, but other technologies were not effective. In 88 studies of health system interventions, evidence was strongest for patient navigation to increase screening for colorectal (risk ratio [RR] 1.64; 95% confidence interval [CI] 1.42 to 1.92; 22 trials), breast (RR 1.50; 95% CI 1.22 to 1.91; 10 trials), and cervical cancer (RR 1.11; 95% CI 1.05 to 1.19). Screening was also higher for colorectal cancer with telephone calls, prompts, other outreach methods, screening checklists, provider training, and community engagement; breast cancer with lay health workers, patient education, screening checklists, and community engagement; cervical cancer with telephone calls, prompts, and community engagement; and lung cancer with patient navigation. Trials of smoking cessation and obesity education and counseling had mixed results. In populations adversely affected by disparities, evidence is strongest for patient navigation to increase colorectal, breast, and cervical cancer screening; telephone calls and prompts to increase colorectal cancer screening; and reminders including lay health workers encouraging breast cancer screening. Evidence is low or insufficient to determine effects of barriers or effectiveness of other interventions because of lack of studies and methodological limitations of existing studies.</p>
	<p>2016 <a href="#">Improving Cultural Competence to Reduce Health Disparities</a></p>	<p>None of the included studies measured the effect of cultural competence interventions on health care disparities. Most of the training interventions measured changes in professional attitudes toward the population of interest but did not measure the downstream effect of changing provider beliefs on the care delivered to patients. Interventions that altered existing protocols, empowered patients to interact with the formal health care system or prompted provider behavior at the point of care were more likely to measure patient-centered outcomes. The medium or high risk of bias of the included studies, the heterogeneity of populations, and the lack of measurement consensus prohibited pooling estimates or commenting about efficacy in a meaningful or responsible way. The term "cultural competence" is not well defined for the LGBT and disability populations and is often conflated with patient-centered or individualized care. There are many gaps in</p>

		the literature; many large subpopulations are not represented.
2012	<a href="#">Fecal DNA Testing in Screening for Colorectal Cancer in Average Risk Adults</a>	Fecal DNA tests have insufficient evidence about its diagnostic accuracy to screen for colorectal cancer in asymptomatic, average-risk patients. There is also insufficient evidence for the harms, analytic validity, and acceptability of testing in comparison to other screening modalities. Existing evidence has little or no applicability to currently available fecal DNA testing.
2012	<a href="#">Narrow band imaging versus conventional white light colonoscopy for the detection of colorectal polyps</a>	We could not find convincing evidence that NBI is significantly better than high definition WLC for the detection of patients with colorectal polyps, or colorectal adenomas. We found evidence that NBI might be better than standard definition WLC and equal to high definition WLC for detection the patients with colorectal polyps, or colorectal adenomas.
2016	<a href="#">Interventions to encourage uptake of cancer screening for people with severe mental illness</a>	A comprehensive search showed that currently there is no RCT evidence for any method of encouraging cancer screening uptake in people with SMI. No specific approach can therefore be recommended. High-quality, large-scale RCTs are needed urgently to help address the disparity between people with SMI and others in cancer screening uptake.
2019	<a href="#">Follow-up strategies for patients treated for non-metastatic colorectal cancer</a>	The results of our review suggest that there is no overall survival benefit for intensifying the follow-up of patients after curative surgery for colorectal cancer. Although more participants were treated with salvage surgery with curative intent in the intensive follow-up groups, this was not associated with improved survival. Harms related to intensive follow-up and salvage therapy were not well reported.
2013	<a href="#">Personalised risk communication for informed decision making about taking screening tests</a>	There is strong evidence from three trials that personalised risk estimates incorporated within communication interventions for screening programmes enhance informed choices. However the evidence for increasing the uptake of such screening tests with similar interventions is weak, and it is not clear if this increase is associated with informed choices. Studies included a diverse range of screening programmes. Therefore, data from this review do not allow us to draw conclusions about the best interventions to deliver personalised risk communication for enhancing informed decisions. The results are dominated by findings from the topic area of mammography and colorectal cancer. Caution is therefore required in generalising from these results, and particularly for clinical topics other than mammography and colorectal cancer screening.
2017	<a href="#">Strategies for detecting colon cancer in patients</a>	The current data suggest that colonoscopic surveillance in IBD may reduce the development of both CRC and the rate of CRC-associated death through early detection, although the quality of the evidence is very low. The detection of earlier

	<a href="#">with inflammatory bowel disease</a>	stage CRC in the surveillance group may explain some of the survival benefit observed. RCTs assessing the efficacy of endoscopic surveillance in people with IBD are unlikely to be undertaken due to ethical considerations.
2017	<a href="#">Decision aids for people facing health treatment or screening decisions</a>	Compared to usual care across a wide variety of decision contexts, people exposed to decision aids feel more knowledgeable, better informed, and clearer about their values, and they probably have a more active role in decision making and more accurate risk perceptions. There is growing evidence that decision aids may improve values-congruent choices. There are no adverse effects on health outcomes or satisfaction. New for this updated is evidence indicating improved knowledge and accurate risk perceptions when decision aids are used either within or in preparation for the consultation. Further research is needed on the effects on adherence with the chosen option, cost-effectiveness, and use with lower literacy populations.
2013	<a href="#">Flexible sigmoidoscopy versus faecal occult blood testing for colorectal cancer screening in asymptomatic individuals</a>	There is high quality evidence that both flexible sigmoidoscopy and faecal occult blood testing reduce colorectal cancer mortality when applied as screening tools. There is low quality indirect evidence that screening with either approach reduces colorectal cancer deaths more than the other. Major complications associated with screening require validation from studies with more complete reporting of harms.
<i>Veterans Administration Evidence-based Synthesis Program</i>	2014 The Effects of Shared Decision Making on Cancer Screening	The ideal SDM intervention would enhance Decision Quality (i.e., increase knowledge and values clarity) and Impact (i.e., increase satisfaction, reduce decision conflict, and have minimal impact on service utilization). The desired impact on Decision Action depends on the screening decision. For decisions about how to screen (such as colorectal cancer screening), the ideal SDM intervention would exert the desired effects on Decision Quality and Impact without reducing measures of Decision Action such as screening intention and behavior. For decisions about whether to screen (such as breast, cervical, and prostate cancer in some age groups and risk categories), the goal is to facilitate personalized decision making based on values and preferences. Hence, there are no desired effects on Decision Action per se in this context.

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<u>2013</u>	Patients with Positive Screening Fecal Occult Blood Tests: Evidence Brief on the Delay Between Time to Colonoscopy and Colorectal Cancer Outcomes	No direct evidence supports the current VHA policy that requires follow-up colonoscopy to be done within 60 days of a positive screening FOBT. There is very low-strength evidence that longer post-referral delays do not worsen survival or CRC stage in patients with various signs and symptoms. One potential explanation for the nonsignificant results is the potential confounding effects of various symptomatic presentations; such that clinicians may prioritize colonoscopy in those with cancer-specific symptoms, thus obscuring a natural association between increased delays and more advanced cancers.
2008	Virtual colonoscopy or computed tomographic colonography (CTC)	Computed Tomographic Colonography (CTC) for routine colorectal cancer screening is not a covered benefit. This decision does not apply to use of CTC for other diagnostic purposes.
Colorectal (Colon) Cancer <a href="https://www.cdc.gov/cancer/colorectal/index.htm">https://www.cdc.gov/cancer/colorectal/index.htm</a>		
2008	Computed tomography (CT) colonography	Given the possible benefits of introducing a widely available minimally-invasive option for colorectal cancer screening, there is considerable interest in CTC.

## Appendix D: Colorectal Cancer Risk Assessment Checklist

If any of the following is true, you are considered to be [HIGH RISK](#) with respect to developing colon cancer ([American Cancer Society Guidelines](#)) and should be following the high-risk screening regimen. People with these conditions have colonoscopies every 5 years.

- African American
- Alaska Native
- Ashkenazi Jewish descent
- Family history of colorectal cancer<sup>i</sup>
- Family history of adenomatous polyps<sup>ii</sup>
- Personal history of inflammatory bowel disease, including ulcerative colitis and Crohn's disease
- Diabetes
- Overweight or obese
- Physically Inactive
- Smoking
- Heavy alcohol use

If you have any of the following inherited conditions, you are [AT VERY HIGH RISK](#) of developing colon cancer, and developing it at a young age. People with these conditions have annual colonoscopies to screen for colon cancer.

- Lynch syndrome (hereditary non-polyposis colon cancer or HNPCC)
- Familial adenomatous polyposis (FAP)
- Peutz-Jeghers syndrome (PJS)
- MYH-associated polyposis (MAP)

If you have any of the following conditions, you [MAY](#) be at high risk for developing colon cancer:

- Night shift work
- Previous treatment (radiation) for testicular or prostate cancer<sup>iii</sup>

For additional details on colorectal cancer risks, see [Colorectal cancer statistics, 2020](#)

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<sup>i</sup> First-degree relative (parent, sibling, or child)

<sup>ii</sup> Contact first-degree relatives to directly ask about colonoscopy results and adenomatous polyps in particular.

<sup>iii</sup> Studies based on men treated in the 1980s and 1990s, when radiation treatments were less precise. The effect of current radiation methods on rectal cancer risk is not clear.

## References

- <sup>1</sup> American Cancer Society. Colorectal Cancer Facts & Figures 2020-2022. 2018 Accessed: November 2020. Available: [www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/colorectal-cancer-facts-and-figures/colorectal-cancer-facts-and-figures-2020-2022.pdf](http://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/colorectal-cancer-facts-and-figures/colorectal-cancer-facts-and-figures-2020-2022.pdf)
- <sup>2</sup> National Cancer Institute Surveillance, Epidemiology, and End Results Program. Cancer Stat Facts: Colorectal Cancer. Available: <https://seer.cancer.gov/statfacts/html/colorect.html>.
- <sup>3</sup> Centers for Disease Control and Prevention. Leading Cancer Cases and Death, All Races/Ethnicities, Males and Female, 2017. Available: <https://gis.cdc.gov/Cancer/USCS/DataViz.html>
- <sup>4</sup> American Cancer Society. Colorectal cancer facts & figures 2020-2022. 2020. Accessed March 20, 2020. Available: [www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/colorectal-cancer-facts-and-figures/colorectal-cancer-facts-and-figures-2020-2022.pdf](http://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/colorectal-cancer-facts-and-figures/colorectal-cancer-facts-and-figures-2020-2022.pdf)
- <sup>5</sup> Joseph DA, King JB, Dowling NF, Thomas CC, Richardson LC. Vital signs: colorectal cancer screening test use - United States, 2018. *MMWR Morb Mortal Wkly Rep.* 2020;69(10):253-259.
- <sup>6</sup> Washington Health Alliance. 2018
- <sup>7</sup> de Moor JS, Cohen RA, Shapiro JA, et al. Colorectal cancer screening in the United States: Trends from 2008 to 2015 and variation by health insurance coverage. *Prev Med.* 2018;112:199-206.
- <sup>8</sup> Zhang Q, Wang Y, Hu H, et al. Impact of socioeconomic status on survival of colorectal cancer patients. *Oncotarget.* 2017;8(62):106121-106131.
- <sup>9</sup> Carethers JM, Doubeni CA. Causes of Socioeconomic Disparities in Colorectal Cancer and Intervention Framework and Strategies. *Gastroenterology.* 2020 Jan;158(2):354-367.
- <sup>10</sup> Doubeni CA, Laiyemo AO, Major JM, Schootman M, Lian M, Park Y, Graubard BI, Hollenbeck AR, Sinha R. Socioeconomic status and the risk of colorectal cancer: an analysis of more than a half million adults in the National Institutes of Health-AARP Diet and Health Study. *Cancer.* 2012 Jul 15;118(14):3636-44.
- <sup>11</sup> White A, Joseph D, Rim SH, Johnson CJ, Coleman MP, Allemani C. Colon cancer survival in the United States by race and stage (2001-2009): Findings from the CONCORD-2 study. *Cancer.* 2017;123 Suppl 24(Suppl 24):5014-5036.
- <sup>12</sup> Green BB. Colorectal Cancer Control: Where Have We Been and Where Should We Go Next?. *JAMA Intern Med.* 2018;178(12):1658-1660. doi:10.1001/jamainternmed.2018.4627
- <sup>13</sup> American Cancer Society. Cancer Facts and Figures. 2018. Accessed: July 2020. Available: <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2018/cancer-facts-and-figures-2018.pdf>
- <sup>14</sup> US Preventive Services Task Force, Bibbins-Domingo K, Grossman DC, et al. Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement [published correction appears in JAMA. 2016 Aug 2;316(5):545] [published correction appears in JAMA. 2017 Jun 6;317(21):2239]. *JAMA.* 2016;315(23):2564-2575.
- <sup>15</sup> Heitman SJ, Hilsden RJ, Au F, Dowden S, Manns BJ. Colorectal cancer screening for average-risk North Americans: an economic evaluation [published correction appears in PLoS Med. 2012 Nov;9(11). Published 2010 Nov 23.
- <sup>16</sup> Gupta S, Sussman DA, Doubeni CA, et al. Challenges and possible solutions to colorectal cancer screening for the underserved. *J Natl Cancer Inst.* 2014;106(4):dju032.
- <sup>17</sup> Dougherty MK, Brenner AT, Crockett SD, et al. Evaluation of Interventions Intended to Increase Colorectal Cancer Screening Rates in the United States: A Systematic Review and Meta-analysis. *JAMA Intern Med.* 2018;178(12):1645-1658.
- <sup>18</sup> Green BB, Wang CY, Anderson ML, et al. An automated intervention with stepped increases in support to increase uptake of colorectal cancer screening: a randomized trial. *Ann Intern Med.* 2013;158(5 Pt 1):301-311.
- <sup>19</sup> Issaka RB, Avila P, Whitaker E, Bent S, Somsouk M. Population health interventions to improve colorectal cancer screening by fecal immunochemical tests: A systematic review. *Prev Med.* 2019 Jan;118:113-121.
- <sup>20</sup> Grubbs SS, Polite BN, Carney J Jr, et al. Eliminating racial disparities in colorectal cancer in the real world: it took a village. *J Clin Oncol.* 2013;31(16):1928-1930.

- 
- <sup>21</sup> Coronado GD, Green BB, West II, et al. Direct-to-member mailed colorectal cancer screening outreach for Medicaid and Medicare enrollees: Implementation and effectiveness outcomes from the BeneFIT study. *Cancer*. 2020;126(3):540-548.
- <sup>22</sup> Brenner AT, Rhode J, Yang JY, et al. Comparative effectiveness of mailed reminders with and without fecal immunochemical tests for Medicaid beneficiaries at a large county health department: A randomized controlled trial. *Cancer*. 2018;124(16):3346-3354.
- <sup>23</sup> Levin TR, Corley DA, Jensen CD, et al. Effects of Organized Colorectal Cancer Screening on Cancer Incidence and Mortality in a Large Community-Based Population. *Gastroenterology*. 2018;155(5):1383-1391.e5.
- <sup>24</sup> Peterse EFP, Meester RGS, Gini A, et al. Value Of Waiving Coinsurance For Colorectal Cancer Screening In Medicare Beneficiaries. *Health Aff (Millwood)*. 2017;36(12):2151-2159.
- <sup>25</sup> Washington Health Alliance. Community Checkup : Improving Health Care in Washington State. April 2020. Accessed: May 2020. Available: <https://wacommunitycheckup.org/reports/2019-community-checkup-report/#Endnotes>.
- <sup>26</sup> Corley DA. The future of colon cancer screening: what do we recommend and will it be too much, too little, or just right?. *Gastroenterology*. 2011;141(6):1956-1958. doi:10.1053/j.gastro.2011.10.007
- <sup>27</sup> Issaka RB, Rachocki C, Huynh MP, Chen E, Somsouk M. Standardized Workflows Improve Colonoscopy Follow-Up After Abnormal Fecal Immunochemical Tests in a Safety-Net System [published online ahead of print, 2020 Mar 31]. *Dig Dis Sci*. 2020;10.1007/s10620-020-06228-z.
- <sup>28</sup> Selby K, Baumgartner C, Levin TR, et al. Interventions to Improve Follow-up of Positive Results on Fecal Blood Tests: A Systematic Review. *Ann Intern Med*. 2017;167(8):565-575. doi:10.7326/M17-1361
- <sup>29</sup> Bretthauer M, Kaminski MF, Løberg M, et al. Population-Based Colonoscopy Screening for Colorectal Cancer: A Randomized Clinical Trial. *JAMA Intern Med*. 2016;176(7):894-902. doi:10.1001/jamainternmed.2016.0960
- <sup>30</sup> Inadomi JM. Editorial: Endoscopic Sedation: Who, Which, When?. *Am J Gastroenterol*. 2017;112(2):303-305. doi:10.1038/ajg.2016.557
- <sup>31</sup> McQuaid KR, Laine L. A systematic review and meta-analysis of randomized, controlled trials of moderate sedation for routine endoscopic procedures. *Gastrointest Endosc*. 2008;67(6):910-923.
- <sup>32</sup> Wernli KJ, Inadomi JM. Anesthesia for colonoscopy: too much of a good thing?. *JAMA Intern Med*. 2013;173(7):556-558. 1
- <sup>33</sup> Sonnenberg A. Sedation in Colonoscopy. *Gastroenterol Hepatol (N Y)*. 2016;12(5):327-329.
- <sup>34</sup> Otto MA. MDedge. Colonoscopy patients prefer propofol over fentanyl/midazolam. June 29, 2017. Available: [www.mdedge.com/surgery/article/141555/colon-and-rectal/colonoscopy-patients-prefer-propofol-over-fentanyl/midazolam](http://www.mdedge.com/surgery/article/141555/colon-and-rectal/colonoscopy-patients-prefer-propofol-over-fentanyl/midazolam)
- <sup>35</sup> Wernli KJ, Brenner AT, Rutter CM, Inadomi JM. Risks Associated With Anesthesia Services During Colonoscopy. *Gastroenterology*. 2016;150(4):888-e18.
- <sup>36</sup> Dossa F, Dubé C, Tinmouth J, et al. Practice recommendations for the use of sedation in routine hospital-based colonoscopy. *BMJ Open Gastroenterol*. 2020;7(1):e000348. Published 2020 Feb 16.
- <sup>37</sup> National Cancer Institute Surveillance, Epidemiology, and End Results Program. Cancer Stat Facts: Colorectal Cancer. Available: <https://seer.cancer.gov/statfacts/html/colorect.html>.
- <sup>38</sup> Centers for Disease Control and Prevention. Colorectal (Colon) Cancer. Available: [www.cdc.gov/cancer/colorectal/basic\\_info/screening/index.htm](http://www.cdc.gov/cancer/colorectal/basic_info/screening/index.htm)
- <sup>39</sup> Washington Health Alliance. "As new report shows colorectal cancer rates rising, Washington lags in appropriate screening." August 9, 2017. Available: <https://wahealthalliance.org/as-new-report-shows-colorectal-cancer-rates-rising-washington-lags-in-appropriate-screening/>