Disclosures:

Nothing to Disclose
Colorectal Cancer (CRC)

- 2nd most common cause of cancer death in US
  - 134,490 new cases expected in US in 2016
  - 49,190 US deaths
- 1.2 million Americans living with CRC
- Incidence and death rates have fallen steadily past 30 years

Cancer Facts and Figures 2015
Overall CRC death rate decline in the US

CRC mortality decline per decade:

- 4% (1970-1980)
- 11% (1980-1990)
- 15% (1990-2000)
- 27% (2000-2011)

Year of death

Death rate per 100,000

Siegel et al, CEBP 2015
Trends in Colorectal Cancer Death Rates* by Race/Ethnicity and Sex, US, 1975-2010
Decline in CRC Incidence and Mortality

- Decline due to:
  - Improvements in treatment
  - Screening → earlier cancer detection → improved survival

**Survival Rates by Disease Stage**

<table>
<thead>
<tr>
<th>Stage of Detection</th>
<th>5-yr Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>90.3%</td>
</tr>
<tr>
<td>Regional</td>
<td>70.4%</td>
</tr>
<tr>
<td>Distant</td>
<td>12.5%</td>
</tr>
</tbody>
</table>
Risk Factor - Polyps

Types of polyps:

- **Hyperplastic**
  - minimal cancer potential

- **Adenomatous**
  - Approximately 90% of colon and rectal cancers arise from adenomas
  - Transition to cancer usually slow (~8-10 yrs or more)
Decline in CRC Incidence

- Decline due to:
  - Screening → polyp removal → prevention

- Recent study estimates that screening has prevented approximately 550,000 cases of colorectal cancer in the US over the past three decades

Yang, Cancer 2014
80% Colon Cancer Screening Rate By 2018
CRC mortality under 2 screening scenarios

80% screening rate by 2018 yields:

- **43,000** averted cases and **21,000** averted cancer deaths/yr
- **277,000** cases averted and **203,000** total averted deaths
  from 2013 through 2030

Meester, Cancer 2015
80% by 2018

Hospitals
working together to save lives

Colorectal cancer is the leading cause of death in the United States among men and women combined, yet it’s one of the most preventable.

Estimated costs for one patient with metastatic cancer are as high as $7 billion. When adults are screened for colon cancer through the detection and removal of precancerous polyps or cancer, when treatment is needed, the costs decline.

Reduce health costs. Help save lives.

THE OFFICIAL SPONSOR OF BIRTHDAYS®

80% by 2018

Primary Care Physicians
working together to save lives

Colorectal cancer is the second leading cause of cancer death in the United States among men and women combined, yet it’s one of the most preventable.

The number of colorectal cancer cases is dropping thanks to screening. We are helping save lives. We can save more.

THE OFFICIAL SPONSOR OF BIRTHDAYS®

CRC Screening Rates

BRFSS 2012

- United States 65.1%
- Florida 66.1%

• Significant differences by race/ethnicity, as well as by education and income
• Lowest rates among the uninsured
Who’s Not Screened?

Testing status of adults aged 50–75 years
- Up-to-date CRC testing: 65%
- Tested but not up-to-date: 28%
- Never tested: 7%

Insurance status of never tested adults aged 50–75 years
- Insured: 76%
- Uninsured: 24%

Barriers to Effective Screening

- Medical practice is demand (patient) driven
- Practice demands are numerous and diverse
- Few practices currently have mechanisms to assure that every eligible patient gets an appropriate recommendation for screening.
- Opportunistic vs organized screening
## Characteristics of High Performing Practices

### Table 2. Strategies to Achieve High Performance in Colorectal Cancer Screening

<table>
<thead>
<tr>
<th>Improvement Model</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prioritize performance</td>
<td>Commit to practice changes needed to improve.</td>
</tr>
<tr>
<td></td>
<td>Have regular practice meetings to review improvement approaches and their impact.</td>
</tr>
<tr>
<td></td>
<td>Offer patients choice of recommended CRC screening options.</td>
</tr>
<tr>
<td>Delivery system design</td>
<td>Adopt and publicize recommendation for regular health maintenance visits.</td>
</tr>
<tr>
<td></td>
<td>Remind patients of needed health maintenance visits.</td>
</tr>
<tr>
<td></td>
<td>Standing orders for CRC screening.</td>
</tr>
<tr>
<td></td>
<td>Review CRC screening status at all patient visits.</td>
</tr>
<tr>
<td>Electronic medical record tools</td>
<td>Maintain accurate information in the health maintenance tables.</td>
</tr>
<tr>
<td></td>
<td>Empower all staff to review health maintenance table at all patient contacts.</td>
</tr>
<tr>
<td></td>
<td>Use reports to identify and contact patients not current with CRC screening.</td>
</tr>
<tr>
<td>Patient activation</td>
<td>Repeat messages to patients who do not initially agree to screening.</td>
</tr>
<tr>
<td></td>
<td>Provide patient education materials about CRC screening.</td>
</tr>
<tr>
<td></td>
<td>Contact patients that have not completed ordered screening.</td>
</tr>
</tbody>
</table>
How to Increase Colorectal Cancer Screening Rates in Practice:
A Primary Care Clinician’s* Evidence-Based Toolbox and Guide
2008

*Including Family Physicians, General Internists, Obstetrician-Gynecologists, Nurse Practitioners, Physician Assistants, and their Office Managers

Mona Sarfaty, MD

EDITORS
Karen Peterson, PhD
Richard Wender, MD

http://www.cancer.org/acs/groups/content/documents/document/acspc-024588.pdf
Steps for Increasing Colorectal Cancer Screening Rates: A Manual for Community Health Centers

Improve Cancer Screening Rates
Using the Four Essential Strategies

1. Make a Recommendation
   The primary reason patients say they have not gotten screened is because a doctor did not advise it.
   A recommendation from you is vital.

2. Develop a Screening Policy
   Create a standardized course of action.
   Engage your team in creating, supporting, and following the policy.

3. Be Persistent with Reminders
   Track test results, and follow up with providers and patients.
   You may need to remind patients several times before they follow through.

4. Measure Practice Progress
   Establish a baseline screening rate, and set an ambitious practice goal.
   Seeing screening rates improve can be rewarding for your team.

Be clear that screening is important. Ask patients about their needs and preferences.

Involving your staff to make screening more effective.

Measure your progress to tell if you are doing as well as you think.
Create a simple tracking system that will help you follow up as needed.
Staff Involvement

- Key Point.....the clinicians cannot do it all!
- Time that patients spend with non-clinician staff is underutilized
- Standing orders can empower nurses, intake staff, etc. to distribute educational materials, schedule appointments, etc.
- Involve staff in meetings to discuss progress in achieving office goals for improving the delivery of preventive services
Assess a patient’s risk status and receptivity to screening.

1. Make a Recommendation

Be clear that screening is important. Ask patients about their needs and preferences.

The primary reason patients say they have not gotten screened is because a doctor did not advise it.

A recommendation from you is vital.
Who Should Be Screened

- CRC usually develops after age 50.
  - Increasing rate in the under-50 population
  - Reasons unclear
- Risk persists through remaining years.

Guidelines near-unanimous for CRC screening starting at age 50 (avg risk)

http://science.education.nih.gov/supplements/nih1/cancer/guide/pdfs/ACT3M.PDF.
Increased and High Risk

- Personal history of
  - Adenomatous Polyps
  - Colorectal cancer
  - Inflammatory bowel disease
    - Ulcerative colitis
    - Crohn’s disease

- Family history
  - Colorectal cancer or adenomas
  - Hereditary syndrome (FAP, Lynch Syndrome, ...)

Colonoscopy is the only recommended screening test for people with these conditions.
Sample Screening Algorithm

Assess Risk: Person & Family

Average Risk = no family hx of CRC or adenomatous polyp

- < 50 yrs
  - Do Not Screen
- ≥ 50 yrs
  - Screen*

If + Diagnosis by Colonoscopy

* Options
  - FOBT at home qyr
  - Flex sig q5yr
  - FOBT + flex sig
  - DCBE q5-10 yrs
  - Colonoscopy q10 yrs

Increased or High Risk = + family or personal hx of CRC or adenomatous polyp, IBD or HNPCC related cancer

+ Personal History
  - Adenoma
  - CRC
  - IBD**

Surveillance Colonoscopy

- Childhood Screening
- Screen 10 yrs before youngest relative or age 40

+ Family History
  - Germline Syndrome
  - Adenoma or Cancer

** IBD refers to inflammatory bowel disease for eight years
CRC Diagnosis Under Age 50 by Race/Ethnicity (SEER 1993-2009)

Rahman et al. Cancer Medicine 2015
CRC Under Age 50 years

- Diagnosis before age 50 is increasing
  - Majority of the increase is in those age 40-49
- Rise is predominantly rectal cancer
- Cause(s) not known. Possible contributors:
  - Obesity
  - Type II diabetes
  - Antibiotic use (humans and livestock)
  - Hormone use in livestock
  - Environmental factors (pesticides,...)
- Numbers remain too small to justify starting screening < 50 yrs for the entire US population
CRC Under Age 50 years

Remember: Guidelines are for screening! **Not** relevant for symptomatic patients.

- Know the symptoms
  - Rectal bleeding
  - Abdominal pain
  - Change in bowel habits
  - Weight loss

- Need increased awareness among clinicians and young adults to facilitate earlier detection

- Recognize those needing screening before age 50 (family history or other risk factors)
#1: Make a Recommendation

Assess a patient’s risk status and receptivity to screening.

Determine screening messages you and your staff will share with patients.
Is a Doctor’s Recommendation Really That Useful?
Address Potential Barriers to Screening*

- **#1: Affordability**
  - “I do not have health insurance and would not be able to afford this test. I do not feel the need to have it done.”

- **#2: Lack of symptoms**
  - “Doctors are seen when the symptoms are evidently presumed, not before.”

- **#3: No family history of colon cancer**
  - “Never had any problems and my family had no problems, so felt it wasn't really necessary.”

- #1 reason among 50-64 year olds & Hispanics
- Nearly ½ uninsured
- #1 reason among 65+ year olds

*Based on 2014 consumer surveys
Address Potential Barriers to Screening*

#4: Perceptions about the unpleasantness of the test
- “I do not think it is a good idea to stick something where the sun don’t shine. The yellow Gatorade I cannot stomach.”

#5: Doctor did not recommend it
- “I fear it will be uncomfortable. My doctor has never mentioned it to me, so I just let it go.”

#6: Priority of other health issues
- “I just turned 50 and I am dealing with another health issue, so it's on the back burner.”

*Based on 2014 consumer surveys

#1 reason among Black/African Americans;
#3 reason among Hispanics
Activating Messages that Motivate

- Most successful communications campaigns relay 3 messages to allow consumers to comprehend what is being asked to motivate action.
- We recommend utilizing these messages, or similar messaging, to educate your constituents around options to help achieve our goal.

There are several screening options available, including simple take home options. Talk to your doctor about getting screened.

Colon cancer is the second leading cause of cancer deaths in the U.S., when men and women are combined, yet it can be prevented or detected at an early stage.

Preventing colon cancer, or finding it early, doesn’t have to be expensive. There are simple, affordable tests available. Get screened! Call your doctor today.
What it is:
Summarizes research findings and provides guidance on how to communicate CRC screening recommendations to core unscreened audiences

What’s in it:
Tools and resources including:
• Infographics
• Press release template
• Social media messages
• Web banner ads
• Cobranded inter-office TV slides
• 80X 2018 core messaging
• “Ways to Get Involved” tools
New! Hispanics and Colorectal Cancer Companion Guide

Market research among Spanish-speakers

--Perceptions
--Barriers
--Recommendations
--Tested Messages
--Sample Collateral

#2: Develop a Screening Policy

Create a standard course of action for screenings, document it, and share it.

Ensure patient education & follow-up
Options for Average risk adults age 50 and older:

Tests That Detect Adenomatous Polyps and Cancer

Colonoscopy every 10 years, or

Flexible sigmoidoscopy (FSIG) every 5 years, or

Double contrast barium enema (DCBE) every 5 years, or

CT colonography (CTC) every 5 years

Tests That Primarily Detect Cancer

Guaiac-based fecal occult blood test (gFOBT) with high test sensitivity for cancer, or

Fecal immunochemical test (FIT) with high test sensitivity for cancer, or

Stool DNA test (sDNA), with high sensitivity for cancer
<table>
<thead>
<tr>
<th>Screening Method</th>
<th>Frequency</th>
<th>Evidence of Efficacy</th>
<th>Other Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stool-Based Tests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sFOBT</td>
<td>Every year</td>
<td>RCTs with mortality end points: High-sensitivity versions (eg, Hemoccult SENSA) have superior test performance characteristics than older tests (eg, Hemoccult II)</td>
<td>Does not require bowel preparation, anesthesia, or transportation to and from the screening examination (test is performed at home)</td>
</tr>
<tr>
<td>FIT&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Every year</td>
<td>Test characteristic studies: Improved accuracy compared with sFOBT Can be done with a single specimen</td>
<td>Does not require bowel preparation, anesthesia, or transportation to and from the screening examination (test is performed at home)</td>
</tr>
<tr>
<td>FIT-DNA</td>
<td>Every 1 or 3 y&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Test characteristic studies: Specificity is lower than for FIT, resulting in more false-positive results, more diagnostic colonoscopies, and more associated adverse events per screening test Improved sensitivity compared with FIT per single screening test</td>
<td>There is insufficient evidence about appropriate longitudinal follow-up of abnormal findings after a negative diagnostic colonoscopy, may potentially lead to overly intensive surveillance due to provider and patient concerns over the genetic component of the test</td>
</tr>
<tr>
<td><strong>Direct Visualization Tests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colonoscopy&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Every 10 y</td>
<td>Prospective cohort study with mortality end point</td>
<td>Requires less frequent screening. Screening and diagnostic followup of positive results can be performed during the same examination.</td>
</tr>
<tr>
<td>CT colonography&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Every 5 y</td>
<td>Test characteristic studies</td>
<td>There is insufficient evidence about the potential harms of associated extracolonic findings, which are common</td>
</tr>
<tr>
<td>Flexible sigmoidoscopy</td>
<td>Every 5 y</td>
<td>RCTs with mortality end point Modeling suggests it provides less benefit than when combined with FIT or compared with other strategies</td>
<td>Test availability has declined in the United States</td>
</tr>
<tr>
<td>Flexible sigmoidoscopy with FIT&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Flexible sigmoidoscopy every 10 y plus FIT every year</td>
<td>RCT with mortality end point (subgroup analysis)</td>
<td>Test availability has declined in the United States Potentially attractive option for patients who want endoscopic screening but want to limit exposure to colonoscopy</td>
</tr>
</tbody>
</table>
Commonly Used Screening Tests

- Colonoscopy
- High Sensitivity Fecal Occult Blood Testing
  - High Sensitivity Guaiac Tests
  - Fecal Immunochemical Tests
Colonoscopy

- Allows direct visualization of entire colon lumen
- Screening, diagnostic and therapeutic
- 10 yr interval
- The most common screening test in US (~85%)
Why Colonoscopy is NOT gold standard

- Evidence does not support “best test” or “gold standard”
  - Colonoscopy misses ~ 10% of significant lesions in expert settings
  - More costly on a one-time basis
  - Higher potential for patient injury than other tests
  - Wide variation in quality (when data are captured and available)
Colonoscopy Quality and Outcomes

- A number of quality measures identified; one of the most impactful appears to be the Adenoma Detection Rate (ADR)
  - ADR = rate of detection of adenomatous polyps at screening colonoscopy in population age 50+
    - Target 25% (30% in men, 20% in women)
  - Recent Kaiser study evaluated ADRs and their impact on CRC outcomes
    - 314,872 colonoscopies by 136 gastroenterologists
    - ADRs ranged from 7.4% to 52.5%.
    - Low ADRs associated with worse outcomes

Corley et al. NEJM 2014: 370: 1298-1306
ADR and Risk of Interval Cancer

Quintile 1 – ADR < 20%

Quintile 5 – ADR > 33%

Corley et al. NEJM 2014: 370: 1298-1306
ADR and Risk of Fatal Cancer

Quintile 1 – ADR < 20%
Quintile 5 – ADR > 33%

Corley et al. NEJM 2014: 370: 1298-1306
WhyColonoscopyisNOTgoldstandard

- Greater patient requirements for successful completion
  - Requires a bowel prep and facility visit, and often a pre-procedure specialty office visit
- Access
  - Limited by insurance status, local resources
- Patient preference
  - Many individuals don’t want an invasive test or a test that requires a bowel prep
Patient Preferences

Inadomi, Arch Intern Med 2012
Patient Preferences

- Diverse sample of 323 adults given detailed side-by-side description of FOBT and colonoscopy (DeBourcy et al. 2007)
  - 53% preferred FOBT
  - Almost half felt very strongly about their preference

- 212 patients at 4 health centers rated different screening options with different attributes (Hawley et al. 2008)
  - 37% preferred colonoscopy
  - 31% preferred FOBT

- Nationally representative sample of 2068 VA patients given brief descriptions of each screening mode (Powell et al. 2009)
  - 37% preferred colonoscopy
  - 29% preferred FOBT
Types of Stool Tests*

A) Tests that detect blood (Fecal Occult Blood Tests)
   - Two types (but multiple brands, variable performance)
     - Guaiac-based FOBT
     - Immunochemical (FIT)

B) Tests that detect aberrant DNA
   - One test (Cologuard) available in U.S.
     - Combines DNA mutation test with FIT
     - Added to June 2016 USPSTF screening guideline

*Stool tests are only appropriate for average risk patients
Guaiac Tests

- Most common type in U.S.
- Solid evidence (3 RCT’s)
- 30 year f/u (NEJM Oct 2013)
- Need specimens from 3 bowel movements
- Non-specific
- Results influenced by foods and medications
- Better sensitivity with newer versions (Hemoccult Sensa)
- Older forms (Hemoccult II) **not recommended**!
Fecal Immunochemical Tests (FIT)

- Specific for **human blood** and for **lower GI bleeding**
- Results not influenced by foods or medications
- Some types require only 1 or 2 stool specimens
- Higher sensitivity than older forms of guaiac-based FOBT
- Costs more than guaiac tests (but higher reimbursement)
PCP Beliefs and Preferences

- Colonoscopy viewed as the best screening test, but many patients face barriers or not willing
  - Colonoscopy often recommended despite access or other challenges
  - Patient preferences rarely solicited
  - Focus on colonoscopy associated with low screening rates in a number of studies

- FOBT/FIT used, but:
  - Lack of knowledge re: performance of new vs. older forms of stool tests, other quality issues
  - Effectiveness questioned or underestimated
FOBT/FIT: Accuracy

Annals of Internal Medicine

Accuracy of Fecal Immunochemical Tests for Colorectal Cancer
Systematic Review and Meta-analysis

Jeffrey K. Lee, MD, MAS; Elizabeth G. Liles, MD, MCR; Stephen Bent, MD; Theodore R. Levin, MD; and Douglas A. Corley, MD, PhD

Background: Performance characteristics of fecal immunochemical tests (FITs) to screen for colorectal cancer (CRC) have been inconsistent.

Purpose: To synthesize data about the diagnostic accuracy of FITs for CRC and identify factors affecting its performance characteristics.

Data Sources: Online databases, including MEDLINE and EMBASE, and bibliographies of included studies from 1996 to 2013.

Study Selection: All studies evaluating the diagnostic accuracy of FITs for CRC in asymptomatic, average-risk adults.

Data Extraction: Two reviewers independently extracted data and critiqued study quality.

Data Synthesis: Nineteen eligible studies were included and meta-analyzed. The pooled sensitivity, specificity, positive likelihood ratio, and negative likelihood ratio of FITs for CRC were 0.79 (95% CI, 0.69 to 0.86), 0.94 (CI, 0.92 to 0.95), 13.10 (CI, 10.49 to 16.35), 0.23 (CI, 0.15 to 0.33), respectively, with an overall diagnostic accuracy of 95% (CI, 93% to 97%). There was substantial heterogeneity between studies in both the pooled sensitivity and specificity estimates. Stratifying by cutoff value for a positive test result or removal of discontinued FIT brands resulted in homogeneous sensitivity estimates. Sensitivity for CRC improved with lower assay cutoff values for a positive test result (for example, 0.89 [CI, 0.80 to 0.95] at a cutoff value less than 20 μg/g vs. 0.70 [CI, 0.55 to 0.81] at cutoff values of 20 to 50 μg/g) but with a corresponding decrease in specificity. A single-sample FIT had similar sensitivity and specificity as several samples, independent of FIT brand.

Limitations: Only English-language articles were included. Lack of data prevented complete subgroup analyses by FIT brand.

Conclusion: Fecal immunochemical tests are moderately sensitive, are highly specific, and have high overall diagnostic accuracy for detecting CRC. Diagnostic performance of FITs depends on the cutoff value for a positive test result.

Primary Funding Source: National Institute of Diabetes and Digestive and Kidney Diseases and National Cancer Institute.

For author affiliations, see end of text.
Figure 2. Pooled sensitivity and specificity for fecal immunochemical tests for the detection of colorectal cancer for all included studies.

<table>
<thead>
<tr>
<th>Author, Year (Reference)</th>
<th>Sensitivity (95% CI)</th>
<th>Specificity (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sohn et al, 2005 (14)</td>
<td>0.25 (0.05–0.57)</td>
<td>0.99 (0.98–0.99)</td>
</tr>
<tr>
<td>Levi et al, 2011 (15)</td>
<td>1.00 (0.54–1.00)</td>
<td>0.88 (0.86–0.90)</td>
</tr>
<tr>
<td>Allison et al, 1996 (31)</td>
<td>0.69 (0.50–0.84)</td>
<td>0.94 (0.94–0.95)</td>
</tr>
<tr>
<td>Allison et al, 2007 (32)</td>
<td>0.86 (0.57–0.98)</td>
<td>0.97 (0.96–0.97)</td>
</tr>
<tr>
<td>Levi et al, 2007 (33)</td>
<td>0.67 (0.09–0.99)</td>
<td>0.83 (0.73–0.91)</td>
</tr>
<tr>
<td>Cheng et al, 2002 (34)</td>
<td>0.88 (0.62–0.98)</td>
<td>0.91 (0.90–0.92)</td>
</tr>
<tr>
<td>Morkawa et al, 2005 (35)</td>
<td>0.66 (0.54–0.76)</td>
<td>0.95 (0.94–0.95)</td>
</tr>
<tr>
<td>Nakama et al, 1999 (36)</td>
<td>0.56 (0.31–0.78)</td>
<td>0.97 (0.96–0.97)</td>
</tr>
<tr>
<td>Nakama et al, 1996 (37)</td>
<td>0.83 (0.52–0.98)</td>
<td>0.96 (0.95–0.96)</td>
</tr>
<tr>
<td>Launoy et al, 2005 (38)</td>
<td>0.86 (0.67–0.96)</td>
<td>0.94 (0.94–0.95)</td>
</tr>
<tr>
<td>Itoh et al, 1996 (39)</td>
<td>0.87 (0.78–0.93)</td>
<td>0.95 (0.95–0.95)</td>
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<tr>
<td>Nakazato et al, 2006 (40)</td>
<td>0.53 (0.29–0.76)</td>
<td>0.87 (0.86–0.88)</td>
</tr>
<tr>
<td>Park et al, 2010 (41)</td>
<td>0.77 (0.46–0.95)</td>
<td>0.94 (0.92–0.95)</td>
</tr>
<tr>
<td>de Wijterslooth et al, 2012 (42)</td>
<td>0.75 (0.35–0.97)</td>
<td>0.95 (0.93–0.96)</td>
</tr>
<tr>
<td>Parra-Blanco et al, 2010 (43)</td>
<td>1.00 (0.77–1.00)</td>
<td>0.93 (0.91–0.94)</td>
</tr>
<tr>
<td>Chiu et al, 2013 (44)</td>
<td>0.85 (0.55–0.98)</td>
<td>0.92 (0.91–0.92)</td>
</tr>
<tr>
<td>Chiang et al, 2011 (45)</td>
<td>0.96 (0.82–1.00)</td>
<td>0.87 (0.85–0.88)</td>
</tr>
<tr>
<td>Brenner and Tao, 2013 (46)</td>
<td>0.73 (0.45–0.92)</td>
<td>0.96 (0.95–0.96)</td>
</tr>
<tr>
<td>Brenner and Tao, 2013 (46)</td>
<td>0.60 (0.32–0.84)</td>
<td>0.95 (0.94–0.96)</td>
</tr>
<tr>
<td>Combined</td>
<td>0.79 (0.69–0.86)</td>
<td>0.94 (0.92–0.95)</td>
</tr>
</tbody>
</table>

Q = 57.05; P = 0.00

$\hat{I}^2 = 68.45\%$ (95% CI, 53.48%–83.42%)

Q = 1200.46; P = 0.00

$\hat{I}^2 = 98.50\%$ (95% CI, 98.21%–98.79%)
FOBT/FIT: Efficacy (USPSTF 2015)

Draft: Figure. Benefits, Harms, and Burdens of Recommended Screening Strategies Over a Lifetime*†

<table>
<thead>
<tr>
<th>A. Benefit: Life Years Gained, per 1,000 Screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIT 1y</td>
</tr>
<tr>
<td>gFOBT 1y</td>
</tr>
<tr>
<td>SIG 10y + FIT 1y</td>
</tr>
<tr>
<td>COL 10y</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Benefit: Colorectal Cancer Deaths Averted, per 1,000 Screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIT 1y</td>
</tr>
<tr>
<td>gFOBT 1y</td>
</tr>
<tr>
<td>SIG 10y + FIT 1y</td>
</tr>
<tr>
<td>COL 10y</td>
</tr>
</tbody>
</table>

Advantages of Stool Tests

- Less expensive
- No bowel preparation.
- Done in privacy at home.
- No need for time off work or assistance getting home after the procedure.
- Non-invasive – no risk of pain, bleeding, perforation
- Limits need for colonoscopies – required only if stool blood testing is abnormal.
- Improves yield of colonoscopy
Making the Best Use of Scarce Resources: Screening colonoscopy vs. FIT

- Represents 20 patients

Screening colonoscopy (refer 1,000 patients)
- Eligible population, referred
- Patient refusal, no shows
- 1 cancer in 400-1000 colonoscopies

FIT testing (2,000 patients)
- Eligible population
- Patients with a positive FIT
- 1 cancer in 20 colonoscopies

*Slide courtesy of Dr. G. Coronado*
Stool Test Quality Issues

- Stool tests are appropriate only for *average risk* (no family history, no history of adenomas,...)
- Use only high sensitivity guaiac or FIT
  - Hemoccult II and other less sensitive guaiac tests should not be used for screening
- All FIT are not created equal; must use high quality brand
- All positive tests must be followed up with colonoscopy
  - Patient should be aware of potential cost sharing if stool test is initial screening method
FOBT/FIT Quality Issues

**In-office FOBT** essentially *worthless* as a screening tool for CRC and should NEVER be used.

Missed 19 of 21 cancers in largest study
Clinicians Reference: FOBT

One page document designed to educate clinicians about important elements of colorectal cancer screening using fecal occult blood tests (FOBT).

Provides state-of-the-science information about guaiac and immunochemical FOBT, test performance and characteristics of high quality screening programs.

Available at www.cancer.org/colonmd
Stool DNA Test (sDNA)

- Fecal occult blood tests detect blood in the stool – which is intermittent and non-specific
- Colon cells are shed continuously
- Polyps and cancer cells contain abnormal DNA
- Stool DNA tests look for abnormal DNA from cells that are passed in the stool*

*All positive tests must be followed with colonoscopy
Stool DNA Test

- One test (Cologuard) currently available
- Combines tests for stool DNA markers associated with cancer and adenomas plus an FIT
Table 1. Sensitivity and Specificity of the Multitarget Stool DNA Test and the Fecal Immunochemical Test (FIT) for the Most Advanced Findings on Colonoscopy.

<table>
<thead>
<tr>
<th>Most Advanced Finding</th>
<th>Colonoscopy (N=9989)</th>
<th>Multitarget DNA Test (N=9989)</th>
<th>FIT (N=9989)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no.</td>
<td>no.</td>
<td>Positive Results</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td></td>
<td></td>
<td>no.</td>
</tr>
<tr>
<td>Any</td>
<td>65</td>
<td>60</td>
<td>92.3 (83.0–97.5)</td>
</tr>
<tr>
<td>Stage I to III*</td>
<td>60</td>
<td>56</td>
<td>93.3 (83.8–98.2)</td>
</tr>
<tr>
<td>Colorectal cancer and high-grade dysplasia</td>
<td>104</td>
<td>87</td>
<td>83.7 (75.1–90.2)</td>
</tr>
<tr>
<td>Advanced precancerous lesions†</td>
<td>757</td>
<td>321</td>
<td>42.4 (38.9–46.0)</td>
</tr>
<tr>
<td>Nonadvanced adenoma</td>
<td>2893</td>
<td>498</td>
<td>17.2 (15.9–18.6)</td>
</tr>
<tr>
<td>All nonadvanced adenomas, non-neoplastic findings, and negative results on colonoscopy</td>
<td>9167</td>
<td>1231</td>
<td>86.6 (85.9–87.2)</td>
</tr>
<tr>
<td>Negative results on colonoscopy</td>
<td>4457</td>
<td>455</td>
<td>89.8 (88.9–90.7)</td>
</tr>
</tbody>
</table>

* These stages of colorectal cancer, as defined by the system recommended by the American Joint Committee on Cancer, are associated with an increased rate of cure.
† Advanced precancerous lesions include advanced adenomas and sessile serrated polyps measuring 1 cm or more.
Cologuard

- FDA cleared for marketing as CRC screening test
- Every 3 year testing interval recommended by manufacturer
- Included in ACS guideline since 2008, and added to USPSTF guideline (June 2016)
- CMS has agreed to cover Cologuard for Medicare beneficiaries age 50 – 85 yrs
  - Medicare reimbursement ~ $500 q 3 yrs
  - Private insurance coverage – limited (but may increase with USPSTF inclusion)
- All positive tests must be evaluated by colonoscopy (may be subject to cost sharing)
#3: Be Persistent with Reminders

Determine how your practice will notify patient and physician when screening and follow up is due.

Ensure that your system tracks test results and uses reminder prompts for patients and providers.
Patient Reminders

- Patient Reminder Types
  1. Education
  2. Cues to action
Get Tested For Colon Cancer: Here's How."
An 7-minute video reviewing options for colorectal cancer screening tests, including test preparation.

Available as DVD, or you can refer patients to the URL to view from their personal computer.
Dear (Name):

Our office has made a commitment to promote the health of its members, and to provide education regarding preventive health measures that you can take to maintain a healthy lifestyle. Our records indicate that you are either overdue for colorectal cancer screening tests, or that you have never had a colorectal cancer screening test.

I am writing to ask you to call our office today to schedule a colorectal cancer screening appointment. By getting colorectal cancer screening tests regularly, colorectal cancer can be found and treated early when the chances for cure are best. Many of these tests can also help prevent the development of colorectal cancer.

The American Cancer Society and a number of other major medical organizations recommend that average-risk individuals choose one of the following options for colorectal cancer screening. Screening should begin at age 50.

**Tests That Find Polyps and Cancer**
- Flexible sigmoidoscopy every 5 years*, or
- Colonoscopy every 10 years, or
- Double-contrast barium enema every 5 years*, or
- CT colonography (virtual colonoscopy) every 5 years*

**Tests That Primarily Find Cancer**
- Yearly fecal occult blood test (gFOBT)** or
- Yearly fecal immunochemical test (FIT)**, or
- Stool DNA test (sDNA), interval uncertain*

* If the test is positive, a colonoscopy should be done.
** The multiple stool take-home test should be used. One test done by the doctor in the office is not adequate for testing. A colonoscopy should be done if the test is positive.

The tests that are designed to find both early cancer and polyps are preferred if these tests are available to you and you are willing to have one of these more invasive tests. Talk to your doctor about which test is best for you.

We have also included for your reference an informational pamphlet on colorectal cancer. Should you have any questions about this pamphlet or colorectal cancer screening tests, please contact us. Thank you for taking time to take care of your health.

Sincerely,

Medical Director

Enclosure: Colorectal Cancer Screening Brochure

According to our records, you indicated that either you or a family member who is under age 60 has a history of colorectal polyps or cancer. This medical history places you at increased risk for colorectal cancer. Because of this, it is advisable that you have a colonoscopy now.

If you had a negative FOBT test, you still need a colonoscopy.

A colonoscopy is a procedure that must be done by a gastroenterologist or a surgeon at an endoscopy center or hospital. This test will allow a doctor to look inside the entire colon (large intestine) to check for a polyp or cancer.

If you do not have health insurance, please do not let this keep you from getting a colonoscopy. We can assist you with scheduling a colonoscopy or finding a doctor who will see you. Please call _____________ to set up an appointment if you have questions.

If you have health insurance (or Medicare/Medicaid), our office will refer you for a colonoscopy. To obtain the referral call or take this letter with you to your next doctor’s appointment.

Thank you for taking care of your health and following through on this important test.

Sincerely,
Clinician Reminder Types

- EMR Registries, Reminders
- Chart Prompts
  - Pre-visit chart reviews
  - Chart alerts
  - Problem lists, integrated summaries
- Health Plan data
  - Provider population info and prompts
  - Direct-to-patient prompts
- Follow up and Tracking
#4: Measure Practice Progress

Discuss how your screening system is working during regular staff meetings and make adjustments as needed.

Have staff conduct a screening audit.

Measure your progress to tell if you are doing as well as you think.

Establish a baseline screening rate, and set an ambitious practice goal. Seeing screening rates improve can be rewarding for your team.
Tracking Practice Progress

- Determine your baseline
- Set realistic goals
- Health Plan data can be extremely valuable
- Identify strengths and weaknesses, barriers, opportunities to improve efficiency
- Track progress and periodically reassess goals
- Track and report physician/team specific feedback on performance
  - Chart audits or other tracking measures (i.e. EHR reports)
  - At least quarterly; monthly is optimal
### Alliance Health Centers

% of patient 50–75yo who have received appropriate colorectal cancer screening

![Bar Chart]

<table>
<thead>
<tr>
<th>Year</th>
<th>CHA</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>UDS Nat'l</th>
<th>UDS NV</th>
<th>HP2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>6.36%</td>
<td>15.54%</td>
<td>12.00%</td>
<td>17.02%</td>
<td>10.00%</td>
<td>17.95%</td>
<td>0.00%</td>
<td>33.00%</td>
<td>14.00%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>28.56%</td>
<td>55.45%</td>
<td>37.88%</td>
<td>33.72%</td>
<td>21.82%</td>
<td>25.93%</td>
<td>28.57%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st qtr, 2015</td>
<td>32.15%</td>
<td>50.00%</td>
<td>39.44%</td>
<td>46.75%</td>
<td>22.00%</td>
<td>27.87%</td>
<td>21.21%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th qtr, 2014</td>
<td>32.15%</td>
<td>50.00%</td>
<td>39.44%</td>
<td>46.75%</td>
<td>22.00%</td>
<td>27.87%</td>
<td>21.21%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014 YTD</td>
<td>25.50%</td>
<td>54.20%</td>
<td>39.31%</td>
<td>48.73%</td>
<td>22.88%</td>
<td>29.85%</td>
<td>40.58%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70.50%</td>
</tr>
</tbody>
</table>

### Table: Colorectal Cancer Screening

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Source</th>
<th>Reference</th>
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</thead>
<tbody>
<tr>
<td>Colorectal Cancer Screening</td>
<td>Percentage of adults 50-80 years of age who had an appropriate screening for colorectal cancer</td>
<td>Patients in the denominator who received one or more screenings for colorectal cancer</td>
<td>All patients 51 to 80 years of age during the measurement year</td>
<td>NCQA/NQF PQRS/PCPI</td>
<td>National Committee for Quality Assurance</td>
</tr>
</tbody>
</table>
Pilot Project: Links of Care

**Primary goal:**
- Increase timely access to specialists for FQHC patients after a positive colorectal cancer screening result.

**Secondary goals:**
- Advance evidence-based strategies to increase colorectal cancer screening rates within primary care systems.
- Develop processes, tools and templates to promote replication of this work in other communities and for other cancer sites.
Links of Care

Awarded three grants in the amount of $100,000 each over 18 months to Federally Qualified Health Centers (FQHCs) networks and local system partners (i.e. state primary care associations, Health Center Controlled Networks (HCCNs), state or local departments of health, state or local comprehensive cancer coalitions, etc.) to advance the Society’s mission priority outcome to decrease colorectal cancer mortality rates.

The grant funding is intended to stimulate collaboration among local partners and support development of the long-term structures and relationships needed to improve access to specialists in the community in the delivery of colorectal cancer screening.

Pilot FQHCs:
• West Side Community Health Services, Saint Paul, MN
• Beaufort-Jasper-Hampton Comprehensive Health Services, Port Royal, SC
• Fair Haven Community Health Center New Haven, CT
References


