Improving Outcomes in Colorectal Cancer: The Science of Screening
Arizona Alliance for Community Health Centers and Arizona Cancer Prevention and Control
June 3, 2015
Durado Brooks, MD, MPH
Director, Cancer Control Interventions
American Cancer Society

ACS and Primary Care
- ACS has prioritized the need to effectively partner with primary care practices and community health centers (CHCs)
- More than 100 staff across the country whose primary responsibility is establishing relationships and providing support to primary care practices, CHCs, PCAs and state chapters of primary care organizations
- A multitude of tools and resources have been created, and more are in development
- Grant opportunities available for community organizations and CHCs

National Colorectal Cancer Roundtable
- National coalition of public, private, and voluntary organizations whose mission is to advance colorectal cancer control efforts by improving communication, coordination, and collaboration among health agencies, medical-professional organizations, and the public.
- Co-Founded by ACS and CDC in 1997
- Goal: increase the use of recommended colorectal cancer screening tests in at-risk populations
- Includes nationally known experts, thought leaders, and decision makers.
- Over 70 Member organization
  www.nccrt.org

Colorectal Cancer (CRC)
- 2nd most common cause of cancer death in US and in Arizona
  - 136,830 estimated new cases in US, 2560 in AZ
  - 50,310 estimated US deaths, 990 in AZ
- 1.2 million Americans living with CRC
- Incidence and death rates have fallen steadily for Blacks and Whites over past 20 years (less pronounced fall for other groups)

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

Siegel et al, CA CANCER J CLIN 2014;64:9–29
Benefits of Screening

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>

*1995 - 2003

Decline in CRC Incidence and Mortality

- Decline due to:
  - Improvements in treatment
  - Screening ➔ earlier cancer detection
  - Screening ➔ polyp removal ➔ prevention

- Recent study estimates that screening has prevented more than 500,000 colorectal cancers in the US over the past three decades

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

Risk Factors

## Increased and High Risk

- Personal history of:
  - Polyps
  - Colorectal cancer
  - Inflammatory bowel disease
    - Ulcerative colitis
    - Crohn’s disease
- Family history of:
  - Colorectal cancer or polyps
  - Hereditary syndrome (FAP, Lynch Syndrome, ...)

*Average risk guidelines do not apply to individuals with these conditions.*

## Non-Modifiable Risk Factors

- **Age**
  - 90% of cases occur in people 50 and older
- **Gender**
  - slight male predominance, but common in both men and women
- **Race/Ethnicity – higher rates among**
  - African Americans
  - Native Americans (esp. Northern Plains Tribes)
  - Alaska Natives
  - Ashkenazi Jews

## Modifiable Risk Factors

- **Lack of physical activity**
  - Less active \(\rightarrow\) raises risk
- **Overweight**
  - Obesity \(\rightarrow\) raises risk of having and of dying from CRC
- **Smoking** \(\rightarrow\) raises risk
- **Alcohol use** \(\rightarrow\) raises risk
- **Type 2 diabetes** \(\rightarrow\) raises risk

## Risk Factor - Polyps

**Types of polyps:**

- **Hyperplastic**
  - minimal cancer potential
- **Adenomatous**
  - approximately 90% of colon and rectal cancers arise from adenomas

## Age: the most impactful risk factor

CRC usually develops after age 50.

The chances of getting it increases as you get older.

CRC screening should begin at age 50 for most people, earlier for those with a family history.

[Image of colon cancer incidence by age]

## Risk Factor - Polyps Diagram

- Normal
- Adenoma
- Carcinoma

Human colon carcinogenesis progresses by the dysplasia/adenoma to carcinoma pathway.
Screening Rates

CRC Screening Rates: US
In 2012, 65.1% of US adults were up to date with screening.
- The percentages of blacks and whites up-to-date with screening were equivalent.
- Lower rates for Hispanics, Native Americans, and for those with low income or low educational attainment—regardless of race/ethnicity
- Lowest rates among the uninsured

CRC Screening Rates: Arizona
In 2012, 58% of Arizona adults were up to date with screening.
- Significant differences by race/ethnicity, as well as by education and income

Improving Screening Rates

Barriers to Effective Screening
- Medical practice is demand (patient) driven
- Practice demands are numerous/diverse
- Out of date screening knowledge and practice
- 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>Delivery system design</td>
<td>Offer patients choice of recommended CRC screening options.</td>
</tr>
<tr>
<td>Electronic medical record tools</td>
<td>Maintain accurate information in the health.</td>
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</table>

<table>
<thead>
<tr>
<th>Type of Intervention</th>
<th>Finding</th>
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</thead>
<tbody>
<tr>
<td>Provider assessment and feedback</td>
<td>Recommended</td>
</tr>
<tr>
<td>Provider reminders/recall</td>
<td>Recommended</td>
</tr>
<tr>
<td>Provider incentives</td>
<td>Insufficient Evidence</td>
</tr>
</tbody>
</table>

**“Action Plan” Toolkit Version**

- Eight page guide introduces clinicians and staff to concepts and tools provided in the full Toolkit
- Contains links to the full Toolkit, tools and resources
- Not colorectal-specific; practical, action-oriented assistance that can be used in the office to improve screening rates for multiple cancer sites (colorectal, breast and cervical)

Available at http://nccrt.org/about/provider-education/crc-clinician-guide/
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

#1: Make a Recommendation

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

Colonoscopy Rates Are Improving In First Degree Relatives (but still sub-optimal)

<table>
<thead>
<tr>
<th>Percent</th>
<th>Non-FDRs ≥50</th>
<th>FDRs 40-49</th>
<th>FDRs ≥50</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
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</table>

Tsai et al. Prev Chronic Dis 2015;12:140533
Assess a patient’s risk status and receptivity to screening.

#1: Make a Recommendation

Determine screening messages you and your staff will share with patients.

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.”

*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

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.
#2: Develop a Screening Policy

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

Ensure patient education & follow-up.

ACS Screening Guidelines

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

Recommended Screening Tests

ACS and USPSTF (Average Risk)

- Colonoscopy
- High Sensitivity Fecal Occult Blood Testing
  - Guaiac
  - Immunochemical
- Flexible Sigmoidoscopy (FSIG)
  - Recent studies support efficacy
  - Availability extremely limited in U.S.

Colonoscopy

- Allows direct visualization of entire colon lumen
- Screening, diagnostic and therapeutic
- 10 yr interval
- The most common screening test in US (>80%)

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)

Adenoma Detection Rate (ADR)

- ADR – rate of detection of adenomatous polyps at screening colonoscopy in population age 50+
- At least one adenoma should be found 25 percent of the time in men, and 15 percent of the time in women (20 percent composite)
- Studies indicate wide variation in ADR, even among clinicians in same practice
- ADR inversely associated with:
  - Interval cancer rate
  - Risk of CRC death

ACS Screening Guidelines

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ADR and Risk of Interval Cancer

- Data from 314,872 colonoscopies performed between January 1, 1998 and December 31, 2010
- 8730 colorectal cancers diagnosed
- 136 gastroenterologists
  - To be included GI had to have completed ≥ 300 colonoscopies and 75 or more screening examinations during the study period
  - ADRs ranged from 7.4 to 52.5%.

ADR and Outcomes: Kaiser

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

Why Colonoscopy is NOT gold standard

- 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

Stool Tests
Types of Stool Tests

A) Tests that detect aberrant DNA
   - One test (Cologuard) available in U.S.
   - Very limited use at present

B) Tests that detect blood
   - Two types
     - Guaiac-based FOBT
     - Immunochemical (FIT)

PCPs and FOBT/FIT

- FOBT/FIT widely used, but:
  - Effectiveness questioned by many clinicians
  - Lack of knowledge re: performance of new vs. older forms of stool tests, other quality issues
  - Colonoscopy viewed as the best screening test, but many patients face barriers or not willing
    - Often recommended despite access or other challenges
    - Patient preferences rarely solicited
    - Focus on colonoscopy associated with low screening rates in a number of studies

Patient Preferences

Many Patients Prefer FOBT/FIT

- 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

FOBT/FIT

- Look for hidden blood in stool
- Two major types (but multiple brands)
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 Sena)
- 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)

FOBT/FIT: Accuracy

Annals of Internal Medicine

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

Background: Performance characteristics of fecal immunochemical tests (FIT) for colorectal cancer (CRC) have been assessed in several studies. This review summarizes data across studies and meta-analysis estimates sensitivity and specificity.

Methods: We identified studies through electronic searches of Medline and other databases. We used a standardized data extraction form to independently extract data from 23 eligible studies. Data from individual studies were meta-analyzed using random-effects models.

Results: The pooled sensitivity and specificity of FIT screening were 46% (95% CI, 42% to 50%) and 96% (95% CI, 94% to 97%), respectively. The pooled sensitivity of FIT screening with 5% threshold was 65% (95% CI, 59% to 70%), and the pooled specificity was 95% (95% CI, 93% to 96%).

Conclusion: Fecal immunochemical tests are effective for CRC screening. The meta-analyzed estimates are consistent with the evidence in other recent analyses. The results of the present study indicate that FIT screening is a promising tool for CRC screening. Further research is needed to confirm these findings and to determine the optimal FIT screening strategy.

Annals of Internal Medicine

FOBT/FIT Quality Issues

In-office FOBT is essentially worthless as a screening tool for CRC and should never be used for this purpose.
FOBT Quality Issues

Sensitivity of Take Home vs. In-Office FOBT

<table>
<thead>
<tr>
<th>FOBT method</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 card, take-home</td>
<td>23.9%</td>
</tr>
<tr>
<td>Single sample, in-office</td>
<td>4.9%</td>
</tr>
</tbody>
</table>


FOBT/FIT Quality Issues

- In-office FOBT is essentially worthless as a screening tool for CRC and should never be used.
- CRC screening by FOBT should be performed with high-sensitivity FOBT - either FIT or a highly sensitive gFOBT (such as Hemoccult SENSA).
- Older, less sensitive guaiac tests (such as Hemoccult II) should not be used for CRC screening.
- All FITs are not created equal (variable performance has been documented b/w brands)
- Annual testing
- All positive screening tests should be evaluated by colonoscopy

High Quality Stool Occult Blood Testing

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 immunochromel FOBT, test performance and characteristics of high quality screening programs.
Available at www.cancer.org/colonmd

Why are Reminder Systems So Important?
- Opportunistic (i.e., coincidental) preventive care is inherently unproductive
- Encounter based, not population based
- Situational context of encounter is a limiting factor
- High potential for omission or error (preoccupation, forgetfulness, lack of familiarity with recommendations, or non-evidence based policy)
- Partial adherence is more likely than complete adherence
- More complex situations (follow-up, greater risk, etc.) are less likely to be properly addressed

Patient Reminders
- Two types
  1. Education
  2. Cues to action

#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 Education

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.

Telephone Reminder Scripts

gFOBT/FFS Follow-up Phone Script for Average-Risk Individuals

Introduction:

Good morning afternoon. May I speak with [Patient Name]?

[Date/time] MM/DD/YYYY. This message is being called from [Your Name] ______ [Phone number of patient].

You recently received a stool test for colorectal cancer screening.

Did you have any questions about the test?

We are calling everyone who received one of these to see if there is any way we can help you complete the test.

1. Have you had the chance to complete and mail your test?

If the answer is YES, get the appropriate date to ensure that the test will be valid and get the appropriate date of receipt. Thanks the patient and let here or her know that we referred those three results.

If the answer is NO, ask the following questions:

Template Letters

Reminder Fold-Over Postcard

Clinician Reminder Types

- Health Plan data
- Provider population info and prompts
- Direct-to-patient prompts
- EMR Reminders
- Chart Prompts
  - “flags”
  - Problem lists
  - Integrated summaries
- 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.
Saving Lives Through Cancer Screening

**Plan:**
- Determine your baseline
- Set Realistic Goals
- Chart audits or other tracking measures (i.e. EHR reports)
- Track and report physician/team specific feedback on performance (monthly if possible)
- Seek patient feedback
- Identify strengths and weaknesses, barriers, opportunities to improve efficiency
- Track progress and periodically reassess goals

**Act:**

**Study:**

**Adjust:**

Chart Audit Tool

| Chart Audit Template | | |
|----------------------|--|--
| Name | ID | Date |
| Gender | Race | Ethnicity |
| Screen Choice | | |
| FOBT | FOBT/FS | FS | CS |
| FOBT Return | | |
| Result | Date | CS | Y/N | Result |
| Date | CS | Y/N | Result |

Communication Within the Office

www.cancer.org/colonmd
www.cancer.org/professionals
Cancer Resource Network

The American Cancer Society is available 24 hours a day, 7 days a week, to help guide you through every step of a cancer experience.

1-800-227-2345 cancer.org

- Easy to understand information to help you make decisions about your care.
- Referral for day-to-day questions such as financial, insurance, transportation, and lodging.
- Connection to others who have been there for emotional support.

New CDC Resource

- A new CDC-sponsored program to provide guidance and tools for clinicians on the best ways to implement screening for colorectal cancer.
- Two versions: one for primary care providers and one for clinicians who perform colonoscopy procedures.
- Continuing education credits are available at no cost for physicians, nurses, and other health professionals.

http://www.cdc.gov/cancer/colorectal/quality