COLON CANCER SCREENING

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CRCok.com
Objectives

- Describe and apply clinically relevant colon cancer screening guidelines.
- Describe hereditary colon cancer syndromes and screening requirements.
- Evaluate newly diagnosed colon cancer.
- Understand colon cancer treatment plans.

No Disclosures
Colon Cancer

- 107,000 new diagnoses in the US per year
- Third Leading cause of cancer death among men and women
- 30,000 deaths in 2010 associated with Colon Cancer
- 20% will present with metastatic disease
Risk Stratification

• Majority are “Average Risk”
  • No Symptoms
  • No personal history of Cancer or polyps
  • No Family history of Colorectal Cancer
  • No Inflammatory Bowel Disease

• Average Risk Screening Recommendations USPTF - 2008
  • High Sensitivity Fecal Occult Blood Testing, annually
  • Flex Sigmoidoscopy every 5 years with FOBT every 3
  • Colonoscopy every 10 years.
American Cancer Society

- High-Sensitivity FOBT or Fecal immunochemical testing annually
- Flex sigmoidoscopy every 10 years and annual FOBT
- Double contrast BE every 5 years
- CT colonography every 5 years
- Colonoscopy every 10 years
- Fecal DNA testing
American College of GE

• Many practioners may not follow recommended guidelines
• “Preferred Strategy”
  • Shortens discussions with patients
  • Increases the likelihood of offering screening
  • Increases likelihood of screening
• ACGE preferred strategy is colonoscopy
ACGE Recommendations

- Divides Screening tools
  - Cancer Prevention Tests
    - Colonoscopy – 10 years
    - Flex Sigmoidoscopy every 5-10 years
    - CT Colonography every 5 years
  - Cancer Detection Tests
    - Annual Hemoccult Sensa Test
    - Fecal DNA testing every 3 years.
- Start at 50 years – Average Risk Individuals
  - African Americans at 45yo
High Risk Patients

• Single 1\textsuperscript{st} degree relative with CRC or advanced adenoma (>1cm) or High-grade Dysplasia or villous elements
  • >60yo → Average Risk
  • <60yo or 2 1\textsuperscript{st} degree Relatives
    • Every 5 years starting at 40 or 10 years younger than the age of the youngest affected relative

• No need for increased screening in family history of simple adenomas.

• Polyposis syndromes
Screening Methods
Fecal Occult Blood Test

- *Coumadin* of screening….
- “Simple & Low Cost”
  - Significant barriers to testing
  - Specimen collection
  - Inappropriate use by MD/DO’s
- Dietary Restrictions
- Increase use of C-scope with Home – Based FOBT declining (2000-2008)
  - Lower SES and Hispanics not showing increased use of C-scopes
    - Preferentially offered FOBT?
FOBT

• 2 Basic types
  • Peroxidase Activity
    • Most Common
    • May fail to detect many small cancers
    • Several large trials have shown decreased mortality with proper use
  • More sensitive Guaiac based Tests (Hemnocult Sensa)
    • Slightly higher sensitivity

• 3 stool samples is more sensitive than one
FOBT

- Simulations have shown similar mortality estimates for colonoscopy vs FOBT
  - When FOBT standards are used
- Colonoscopy is often prescribed for patients preferring FOBT/FIT test
  - May lead to less compliance with screening recommendations
    - Particularly when patient desires FOBT
FOBT

• Major drawback is compliance
  • 38-60% of patients completed all FOBT tests
• Lack of infrastructure to administer and follow-up test
  • Low Reimbursement
  • Requires patient participation
• More likely to be performed in lower SES groups.
Cologuard

- Recently approved by USPTF for screening for colon cancer
- Relies on DNA testing of stool
  - KRAS
  - Abnormal Methylation
  - Hemoglobin assay
- Collected at home
- Positive test mandates colonoscopy
Cologuard Sensitivity

Thomas F. Imperiale, M.D., David F. Ransohoff, M.D., Steven H. Itzkowitz, M.D., Theodore R. Levin, M.D., Philip Lavin, Ph.D., Graham P. Lidgard, Ph.D., David A. Ahlquist, M.D., and Barry M. Berger, M.D.

Cologuard

• Indications
  • Adults of either Sex
  • Age greater than 50
  • Average Risk

• Contraindications
  • History of Polyps, Cancer, etc
  • Positive result from another modality in the last 6 months
  • Hereditary Cancer Syndromes
  • IBD, Crohns, Ulcerative Colitis
  • Family history of CRC
Sigmoidoscopy

- Evaluates the distal Colon
- Effectiveness has never been proven in a randomized trial
- Patients with hysterectomies have fewer polyps detected
  - Adequacy of exam?
- ACS recommends every five years combined with FOBT
- If polyp is found → Full colonoscopy
  - 1/3 will have proximal neoplasms
- 15-30% of patients with negative flex-sig and FOBT will have proximal neoplasm
Radiology

- **Barium Enema**
  - Never been evaluated in a controlled trial

- **CT Colonography**
  - Requires a “vigorous cathartic laxative”
  - Rectal Catheter and insufflation
  - C-scope polyp cutoff size controversy
    - 6mm → 15-25% will need a c-scope
Colonoscopy

• “Gold standard” to evaluate the entire colon
• “Owing to its potential for a high level of effectiveness in CRC prevention and extensive study of outcomes associated with its use, quality colonoscopy .... remains the preferred CRC strategy.”
Colonoscopy

- No prospective randomized controlled trial
- Cohort studies examining patients that underwent a colonoscopy with polypectomy show a 76-90% reduction in CRC incidence.

Risks
- Perforation
- Sedation
- Missed cancer
  - Inadequate polypectomy
  - Poor Prep
Enhancing Screening

- Overuse vs Underuse
  - Multiple Guidelines
  - Complicated patient discussion
  - Internet/TV/Media
Factors associated with higher rates of Screening

- Having regular access to care
- Having insurance
- Having a physician recommend screening
- Effective patient-physician communication
- Non-clinician support systems
- Participating in screening for other cancers
- Non-Hispanic white
- Higher education level
- Higher income
- Family member with cancer
- Reminder systems
- Assisting patients to keep their appointments.
## Strategies to improve CRC screening

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Strength of Evidence</th>
<th>Effective</th>
<th>Absolute Change in Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elimination of structural barriers</td>
<td>High</td>
<td>Yes</td>
<td>15-42</td>
</tr>
<tr>
<td>One-on-one interactions</td>
<td>High</td>
<td>Yes</td>
<td>15-42</td>
</tr>
<tr>
<td>Patient reminders</td>
<td>High</td>
<td>Yes</td>
<td>5-15</td>
</tr>
<tr>
<td>Small media without decision aides</td>
<td>High</td>
<td>No</td>
<td>-6-15</td>
</tr>
<tr>
<td>Small media with decision aides</td>
<td>Low</td>
<td>Mixed</td>
<td>-3-23</td>
</tr>
<tr>
<td>Group Education</td>
<td>Low</td>
<td>No</td>
<td>-7-12</td>
</tr>
</tbody>
</table>
System Level

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Absolute Change in Screening Rate</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reminders</td>
<td>2-5%</td>
<td>Low</td>
</tr>
<tr>
<td>System Level</td>
<td>7-28%</td>
<td>High</td>
</tr>
</tbody>
</table>

- Few providers have systems set up for collection, testing and following FOBT
- Colonoscopy is often the only screening test offered
- Increased screening will require a shift in focus from short term episodic care
Hereditary Syndromes

• Familial Adenomatous Polyposis
  • Genetic Counseling
  • Consider Surgery
  • Retained rectum → q 6months
  • Upper Endoscopy is also warranted
Hereditary Non-Polyposis Colorectal Cancer

- Amsterdam II Criteria
  - With **three** or more relatives with histologically verified Lynch syndrome-associated cancers
    - One of whom is a first degree relative of the other two and in whom FAP has been excluded
  - With Lynch syndrome-associated cancers involving at least **two** generations.
  - In which **one** or more cancers were diagnosed before the age of 50.
Hereditary Non-Polyposis Colorectal Cancer

- Colonoscopy every 2 years beginning at 20-25 years
- Yearly colonoscopy beginning at age 40.
Colon Cancer Presentation

- Often asymptomatic
  - Change in bowel habits
  - Blood
  - Anemia
  - Abdominal Pain
- Colonoscopy
- Perforation
- Obstruction
60ish yo/f with 5 year history of anemia...
Workup

• Family history
• Complete Colonoscopy
  • 10% rate of synchronous Cancers
• Basic Laboratory
  • No proven benefit
  • Liver function tests are not useful
• CT Chest, Abdomen and Pelvis
  • Can consider PET for contrast allergy
Surgical Resections

- Resection of lymphovascular bed is critical for staging
- 5cm margins
Total Mesorectal Excision (TME)

- Conventional Surgery violates rectal mesentery
- Rectal Cancer should be preserved in the rectal mesentery
  - Therefore excision should reduce local recurrence
  - 25% → 5-7%
  - Positive Margins → 3x increased mortality

Surgical techniques

- Laparoscopic vs Open colectomy
  - COST trial 2004
    - Multicenter, large
      - Randomized 428 – lap vs 435 - open
    - Equal oncologic outcomes
  - Surgeon should have experience with 20 laparoscopic colons before attempting for curable cancer
- Laparoscopic
  - Shorter hospital stay
  - Longer operative time
  - Questionable cost?
- Robot shows no benefit for Colon Cancer
Surgical Technique

- Rectal Cancer Survivability is directly linked to surgical technique
  - Martling compared surgeons trained in TME with historical controls
    - APR rate - 55-60% vs 15%
    - Local Recurrence Rate - 14-15% vs 6%
    - Cancer-Related Death Rate - 15-16% vs 9%
    - All are statistically significant

## Adjuvant Therapy

<table>
<thead>
<tr>
<th>Stage</th>
<th>5 year survival</th>
<th>Adjuvant Treatment</th>
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</thead>
<tbody>
<tr>
<td>1 (T1-2, N0, M0)</td>
<td>&gt;95%</td>
<td>None</td>
</tr>
<tr>
<td>2 (T3-4, N0, M0)</td>
<td>70-80%</td>
<td>For selected patients with high risk features</td>
</tr>
<tr>
<td>3 (T1-4, N1-2, M0)</td>
<td>40-60%</td>
<td>FOLFOX or FOLFIRI</td>
</tr>
<tr>
<td>4 (M1)</td>
<td>~20%</td>
<td></td>
</tr>
</tbody>
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FOL – Folinic acid (leucovorin)
F – Fluorouracil (5-FU)
OX – Oxaliplatin (Eloxatin)
IRI – irinotecan (Camptosar)
Metastatic Colon Cancer

• Multidisciplinary Approach
• Resection of liver and lung disease shows survival benefit
• FOLFOX and FOLFIRI can stabilize disease in 50% of patients
• No survival benefit for resection of primary tumor if metastatic disease is unresectable
  • Improved local control
  • Elective resection dramatically superior mortality rates compared to emergent in stage IV colorectal cancer.
Obstructing Colon Cancer

- Resection +/- Ostomy
- Bypass
- Stent
## Post-Polypectomy Surveillance

<table>
<thead>
<tr>
<th>Findings</th>
<th>Followup</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No polyps</td>
<td>10 years</td>
<td>No family history</td>
</tr>
<tr>
<td>Small Distal hyperplastic Polyps</td>
<td>10 years</td>
<td></td>
</tr>
<tr>
<td>&lt; 3 small T.A.</td>
<td>5-10 years</td>
<td>&lt; 1cm</td>
</tr>
<tr>
<td>3-10 Adenomas</td>
<td>3 years</td>
<td>If follow up shows only 1-2 TA’s → 5 year follow up</td>
</tr>
<tr>
<td>Adenoma &gt; 1cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Villous Features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Grade Dysplasia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 10 Adenomas</td>
<td>&lt; 3 years</td>
<td></td>
</tr>
</tbody>
</table>
Colon Cancer Surveillance

- Check CEA's
  - q3mo x 3years
  - q6mo x 2years
- CT C/A/P 3 years after resection.
- Colonoscopy 3y after operative therapy
  - If okay then q5years.
  - Rectal cancer (w/o radiation) gets q6mo flex-sig.
Future

• “Centers of excellence”
• Improved Screening Modalities
  • Fecal DNA
• Genetic Evaluations
  • Cancer diagnosis and discussion about their family members
• Early resection
  • Permanent colostomy versus no incision
• Adjuvant Therapy
Conclusions

- Colon Cancer Screening is an essential component in any public health effort to reduce cancer mortality.
- Socioeconomic factors greatly impact tests ordered and offering of screening.
- High risk individuals need early recognition and appropriate screening.
- Surgical Technique is a critical component to survivability in colorectal cancer.
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