2011.. Defining Quality Colonoscopy
What Should We Do?

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Outline/Goals
Quality Colonoscopy

• What is the problem?
• Why is there a problem?
• Where is there a problem
• Defining/refining focus on quality
Quality Colonoscopy
What’s the Problem?

- Wide variations performance/outcomes -different endoscopists
  - Missed cancers by PCPs >GI
  - GI-variance adenoma and CRC detection
  - Higher complication rate for low volume colonoscopists

Quality Colonoscopy
Right Sided Lesion Problem

- Endoscopist dependent
  - less likely problem when gastroenterologist does
  - Interval cancers higher for non-GI colonoscopist
  - Variability of 30% if surgeon
  - Higher than variance with adenoma detection
  - 7.18x higher than adenoma detection

Singh et al. Gastroenterology 2010; 139:1128-1137
Baxter et al. Gastroenterology 2011; 140: 65-72
Hetzel et al. Am J Gastroenterol 2010; 105:2656-64
CRC and Colonoscopy
Global Protection at Last!

10 yr CRC

CRC and Colonoscopy
Global Protection at Last!

20 yr CRC

n = 1688 CRC
n = 1932 controls

n = 1692 CRC
n = 1896 controls

Overall
Left colon
Right colon

Colonoscopy by GIs

CRC and Colonoscopy
Global Protection at Last!

n = 1692 CRC
n = 1896 controls

100%
0%

1-2
3-4
5-9
10-19
>20 yrs

CRC and Colonoscopy
Global Protection at Last!

n = 1692 CRC
n = 1896 controls

0%

CRC and Colonoscopy
Global Protection at Last!

n = 1692 CRC
n = 1896 controls

Ann Intern Med 2011 Jan 4; 154:22
J Clin Oncol 2011 (in press)

http://dx.doi.org/10.1200/JCO.2011.35.9307
Quality Indicators Risks Interval CRC

- Poland CRC screening database
  - 45,206 patients/186 endoscopists
  - p = 0.008
- Adenoma detection rate correlate with CRC
- Hazard ratios for adenoma detection <20%
  - <11% HR 10.94
  - 11-14% HR 10.75
  - 15-19.9% HR 12.50

Why Colonoscopy is Imperfect
Uncontrollable Factors

- Biologic variances
- Demographic factors (e.g. obesity/smoking)
- Rapidly growing polyps/tumors
  - Increased risk of MSI in “interval” cancers
Why Colonoscopy is Imperfect

Controllable Factors

• Ineffective bowel preparation
• Ineffective application technology
  - suboptimal examination technique
  - suboptimal/insufficient time
• Technical limitations of colonoscopy
  – Hidden mucosa
  – Flat lesions
• Ineffective polypectomy

All controllable variables with current technology

Colonoscopy Preps

New Standards of Quality

• Split dosing, regardless of the preparation used
  - improved prep—particularly right colon
• Magnitude benefit
  - greater than differences comparison prep trials
  - data is overwhelming
  - YES-COFFEE!
• Warrants asking patients to make sacrifice of getting up in the night

New Standard of Care for colonoscopy prep
### Quality Colonoscopy
**Impact of Inadequate Prep**

**Missed Lesions**

<table>
<thead>
<tr>
<th>Adenomas</th>
<th>Miss rate % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td></td>
</tr>
</tbody>
</table>

#### Recommendation if index adenoma
- Repeat colonoscopy within 1 yr

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### Quality Colonoscopy
**Missed lesions at 1 yr**

<table>
<thead>
<tr>
<th></th>
<th>Distal only</th>
<th>Proximal only</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline (100%)</td>
<td>55%</td>
<td>27%</td>
<td>18%</td>
</tr>
</tbody>
</table>

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**Key Point**
- Proximal polyps - find one... Look again!

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Polypl Prevention Trial
N=1864 with adenomas @baseline

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Gastrointest Endosc 2011;73(6):1207-14

ACG 2011
Quality Colonoscopy
Technical Factors Linked to ADR

- National Health Service Bowel Cancer Screening
  - Mean withdrawal ≥10min
    - 3x increase ADR (p<0.001)
    - 5x increase right colon ADR (p<0.001)
    - No increase with retroflexion in rectum

- Technical factors significant
  - Bowel prep ≥adequate = 40% increase ADR (p<0.001)
  - Antispasmodotic use (hyoscine) (p<0.001)

Bottom Line
Withdrawal Time = Quality?

- Recent data? WD time not predictive
  - Literature is otherwise overwhelmingly consistent that it is
    - suggested procedure time (no WD time data)
    - accounts 1/3 third of the variation in detection
  - ADR is the prime measure but ....
    - WD time should be recorded
    - available if ADR is low

Rapidly becoming a standard of care of issue

Gastrointest Endosc 2009; 69(7):1288-95
Is Biology to Blame?
See No Evil….Serrated Lesions

BRAF mutation +
Inactivation multiple tumor suppressor genes
Cancers predominantly right sided/poor differentiation

Greater risk than 1-3 tubular adenomas

- Large (> 1cm) serrated adenoma
  - marker for advanced CRC neoplasia (OR 3-4x)
- Inactivation k-ras
- Silencing of DNA repair gene MGMT (3-4x)
- Distal cancers

Am J Gastroenterol 2009; 104:695-2664
Am J Gastroenterol 2009; 104:695-702
Gastroenterology 2010; 139(5):1444-7
Am J Gastroenterol 2010; 105:2656-2664

Can We Improve Detection?
Prevalence of Serrated Lesions

Increased prevalence?
Increased awareness and careful evaluation?

Am J Gastroenterol 2010; 105:2656-2664
Am J Gastroenterol 2009; 104:695-702
Gastroenterology 2010; 139(5):1444-7
Am J Gastroenterol 2010; 105:2656-2664
Quality Colonoscopy

Importance of Definitive Polypectomy

Incomplete Polypectomy
The Butcher to Blame?

• 35% interval cancers at prior polypectomy sites
  - Minneapolis VA: 12/45 (5 < 1cm)
  - Chemoprevention / PPT: 11/32 (3 < 1 cm)
• Possible factors:
  - Small polyps: biopsy versus snare
  - Large polyps: piecemeal vs en bloc

Clin Gastroenterol Hepatol 2006; 4:1259-6
Gastrointest Endosc 2005;61;385-9
Gastroenterology 2005; 129:34-9
Piecemeal Polypectomy: Recurrence

- Sessile lesions > 2 cm:
  - 10 western studies: 15-55%
  - Piecemeal + APC tx: 10-21%
- Piecemeal +/- APC
  - Visual recurrence: 17.6%
  - Microscopic: 5.8%
- EMR of 421 polyps
  - Piecemeal: 17%
  - En bloc: 6%

GIE 2009; 70:344
GIE 2002; 55:371
DDW 2010 Abstract 683d

Improving Quality of Colonoscopy
Technical Factors

Where and how you look?
Where Are You Looking During Colonoscopy?

- Influence visual gaze pattern (VGP) on ADRs
- 3 videos high-definition segments normal withdrawals
- Image divided 9 equal sections: 1 central/ 8 peripheral
- Watching central section screen vs. peripheral
- Duration % central gaze time ($r=0.67$)
- Strong negatively correlated with
- High-level detection might involve
  Gaze pattern
  Technical ability to visualize optimal portion

Quality Colonoscopy Examination on Insertion

- Inspection on insertion vs withdrawl
  - not increase ADR 52% vs 58% (NS)
- Polypectomy on insertion vs withdrawl
  - higher ADR
    - Insertion only ($p=0.045$)
    - All polyps 28.7%
    - Polyps <5mm 25%
    - Withdrawl only 16.7%

Hewett et al. DDW 2011
Sanka et al DDW 2011
Quality Colonoscopy
Looking Backward = Move Forward?

- Prospective observational study
  - evaluation of retroflexion in cecum
  - withdrawal to hepatic flexure
- Successful 94.4% patients
  - looping predictive of failure (89%)
  - Retroflexion identified miss rate
    - Per adenoma 9.8%
    - ITT per patient adenoma 4.4%
  - Comparable to second exam (forward view)

Mechanical Improvements Retroflexing in Cecum
Quality Colonoscopy
Does Scheduled Time Matter?

ADR's appear to decline during day
-Endoscopist dependent (likely)
No measure of endoscopist fatigue
No measure for rushed procedures

Am J Gastroenterol 2011;106:1457-65
Am J Gastroenterol 2011;106:1466-71

Quality Colonoscopy
Devices to improve polyp detection

<table>
<thead>
<tr>
<th>Technology</th>
<th>ASGE Tech Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wide angle colonoscopy</td>
<td>Not improve</td>
</tr>
<tr>
<td>Third eye retroscope</td>
<td>Promising but limited</td>
</tr>
<tr>
<td>Cap fitted colonoscopy</td>
<td>Mixed results</td>
</tr>
</tbody>
</table>

Adjunctive benefit
Facilitates cecal intubation

Gastrointest Endosc 2011;73:1-92-97
Quality Colonoscopy
Appropriate Intervals

Accounting problems or………
Accountable problems?

Overuse of screening colonoscopy
Medicare population

Predictors early repeat
Male
Age <75
Mid-Atlantic residence
Office colonoscopy
High volume practice

Arch Intern Med 2011 (epub)
Post Colonoscopy Quality Adherence to Guidelines

  - 116 BC gastroenterologists
  - Based on 2003 MSTF surveillance guideline

- 98% performed colonoscopy
- 78% reported familiarity with 2003 guideline
- 57% said these guidelines very influential in their practice
  - 64% correct if two small adenomas—5 yrs
  - 32% correct surveillance first-degree relative CRC>60=10 yrs

Extra Screening Colonoscopy So What’s the Problem?

- Colonoscopy @10 yr intervals
  - Comparable cost-effectiveness to FIT yearly
- Colonoscopy @5-year intervals
  - Relatively cost ineffective to FIT yearly
- Healthcare system not operate appropriately
  - W/o regulation
- Appropriate screening intervals
  - Priority for quality measurement in colonoscopy
**Measure and Record Your Quality Measures for Colonoscopy Best Validity**

- Cecal intubation rate

  National registry participation will be key!
  ACG/ASGE GIQuIC

- Performance linked to payment?

  Best combination for incentive system

**Public reporting of data**

*Am J Gastroenterol.* 2010; 105:1925–1933

**Defining Quality Colonoscopy Areas to Focus**

- Emphasis on quality prep
- Avoidance ineffective application technology
  - suboptimal examination technique
  - suboptimal/insufficient time
- Recognize/overcome possible technical limitation
  - Hidden mucosa
  - Flat lesions
- Assure definitive complete polypectomy
- Surveillance/screening c/w guidelines

**Serrated adenoma**

**Low detection**

**Wide variability**
Quality Colonoscopy
Bottom Line

• Evidence of adequate adenoma detection
• Appropriate utilization rates
  - Compliance with current recommended intervals

Effective CRC protection