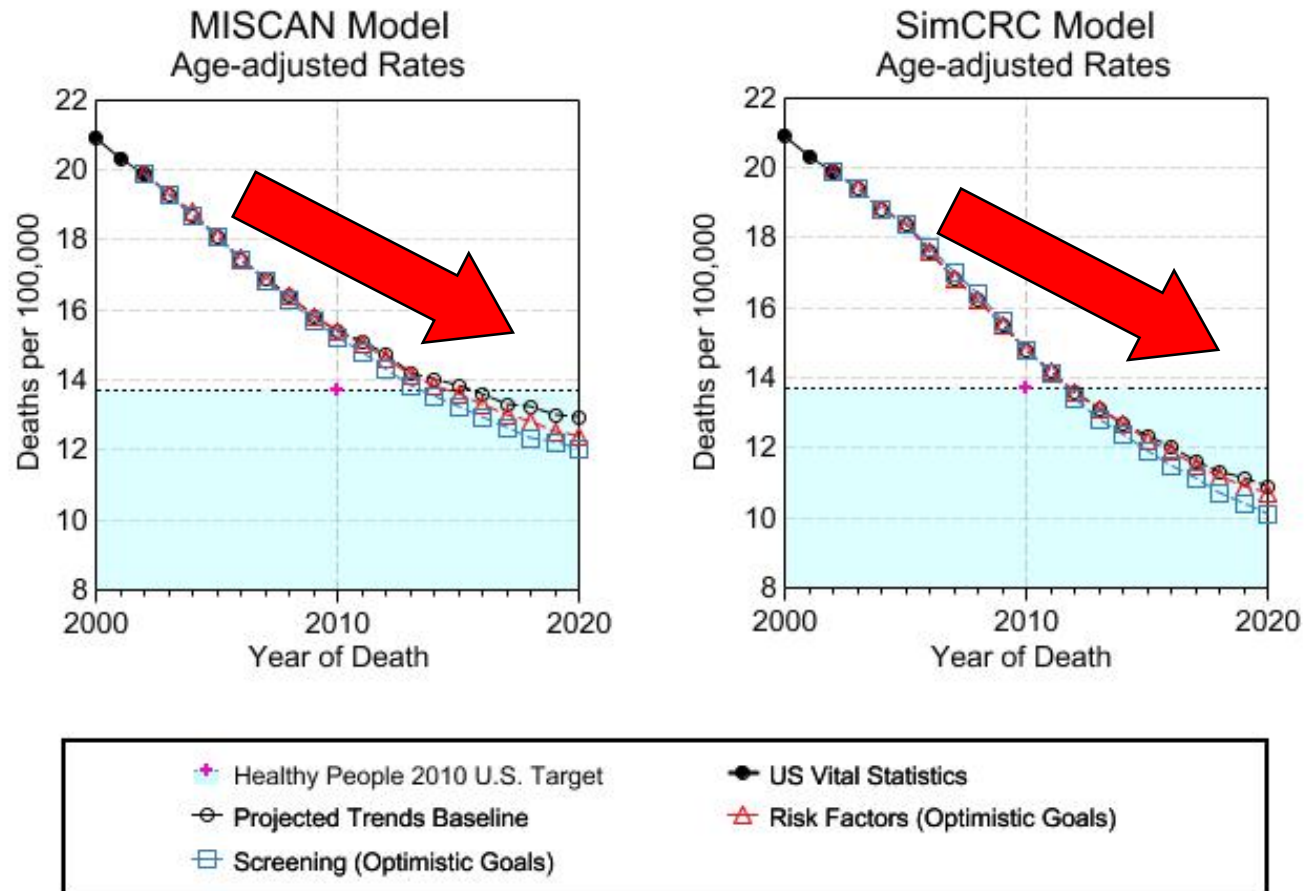


Colorectal Cancer Screening: GI Specialty Issues

**Institute of Medicine
February, 2008**

David Lieberman MD
Chief, Division of Gastroenterology
Oregon Health and Science University
Portland VAMC

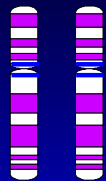
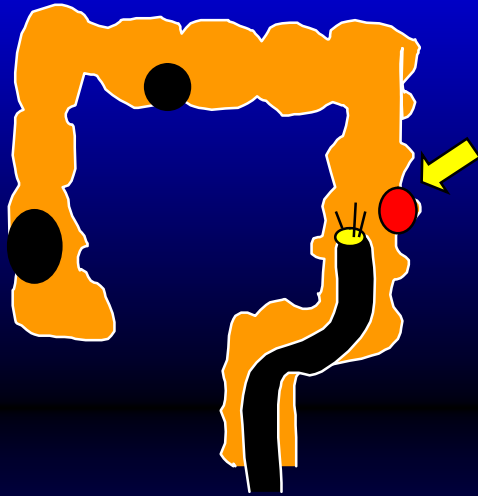
Projected Colorectal Cancer Mortality Rates Both Races, Both Sexes, All Ages, By Model Description of Selected Goal



Created by www.cisnet.cancer.gov/projections/colorectal/compare_models.php on 12/12/2007 12:59 pm.
Rates are age-adjusted to the 2000 standard population using age groups <1y, 1-4y, 5-14y, 15-24y, 25-34y, 35-44y, 45-54y, 55-64y, 65-74y, 75-84y, 85+y.
Treatment-related objectives were not included in Healthy People 2010. We included treatment goals to evaluate the potential impact on colorectal cancer mortality.



gFOBt
FIT

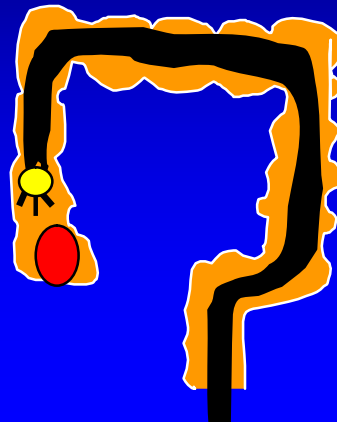
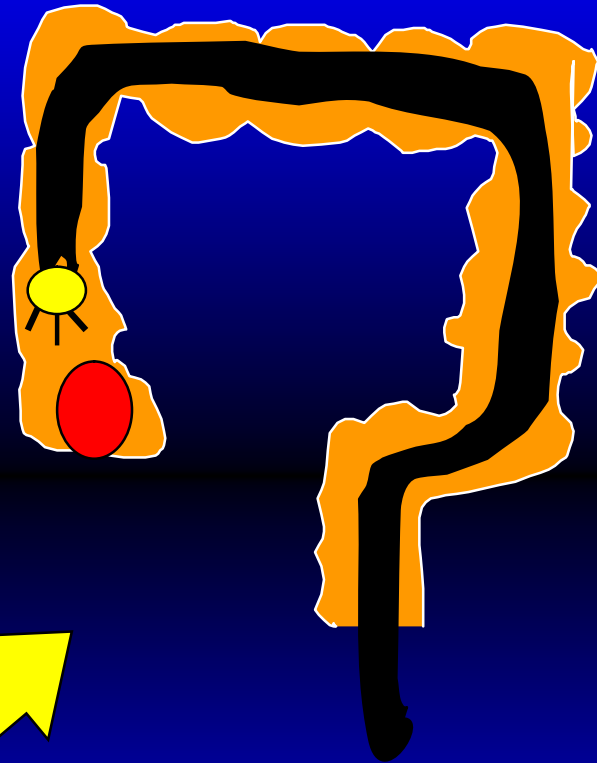


Genetic/
Proteomics



Imaging

Colonoscopy

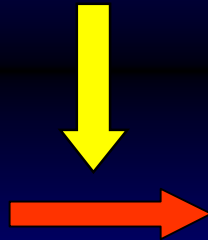


Colorectal Cancer

Genetic
Environmental
Lifestyle



Normal Colon



Advanced
Adenoma

10-20%
Lifetime Risk



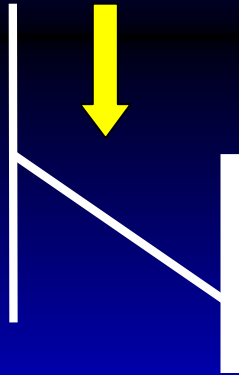
Cancer

5-6% Lifetime Risk

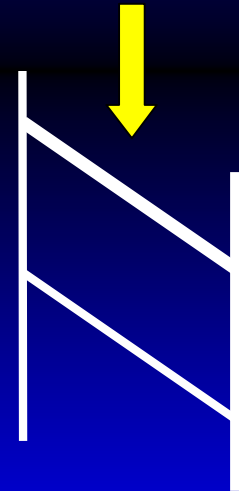
Raising the bar



Colon
Cancer
Detection

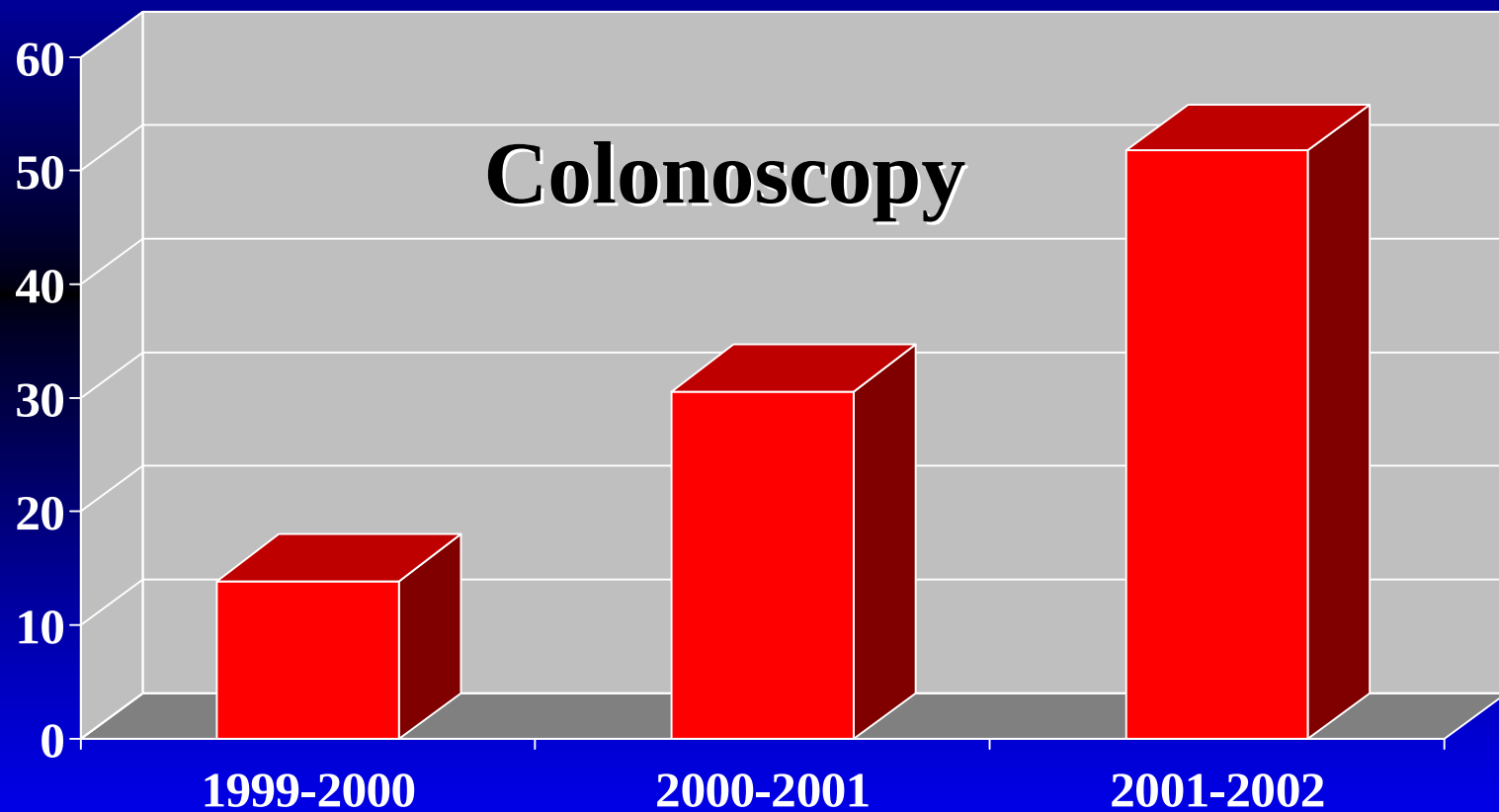


Colon Cancer
Prevention



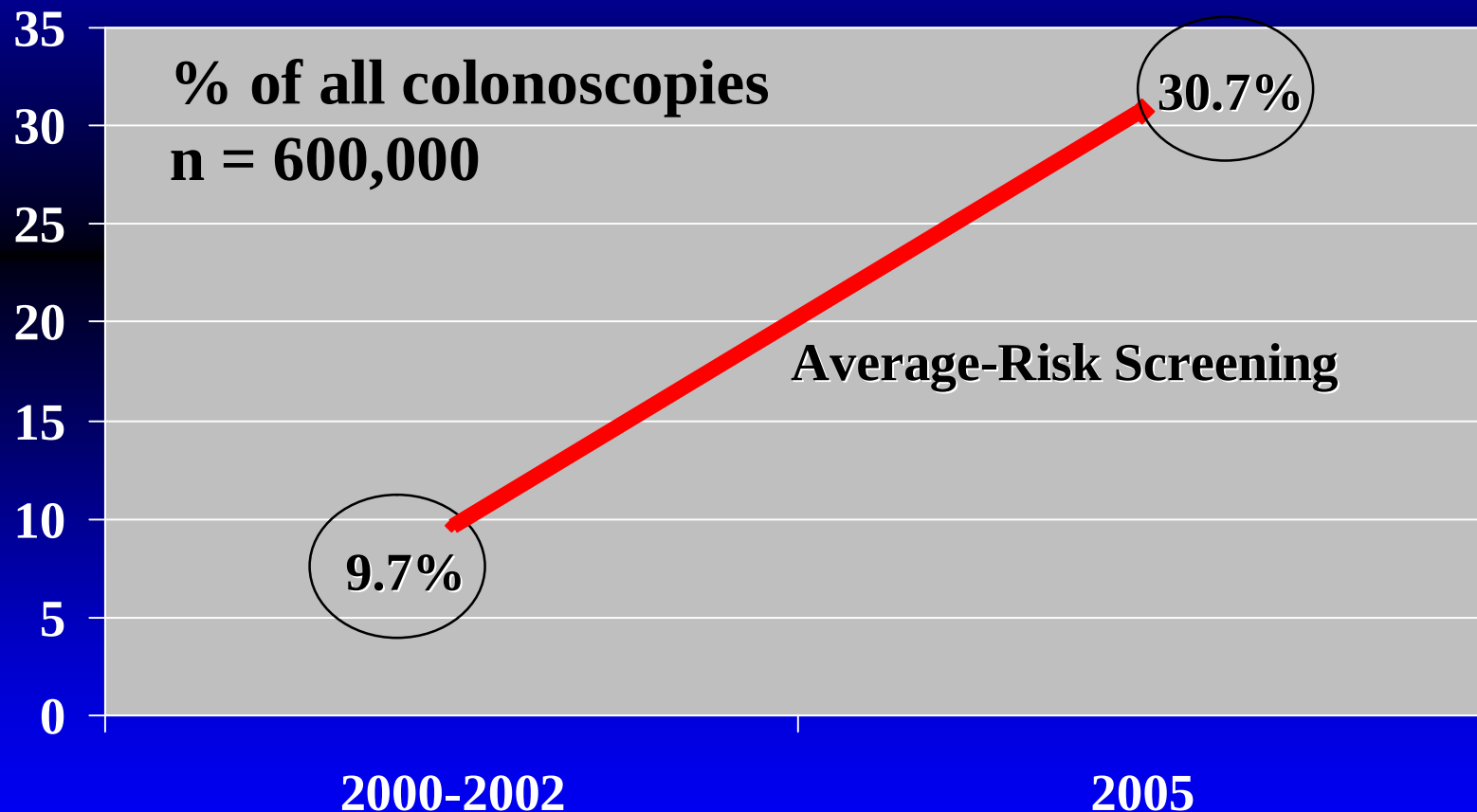
% Change in Procedure Volume

1999-2002 Medicare Data



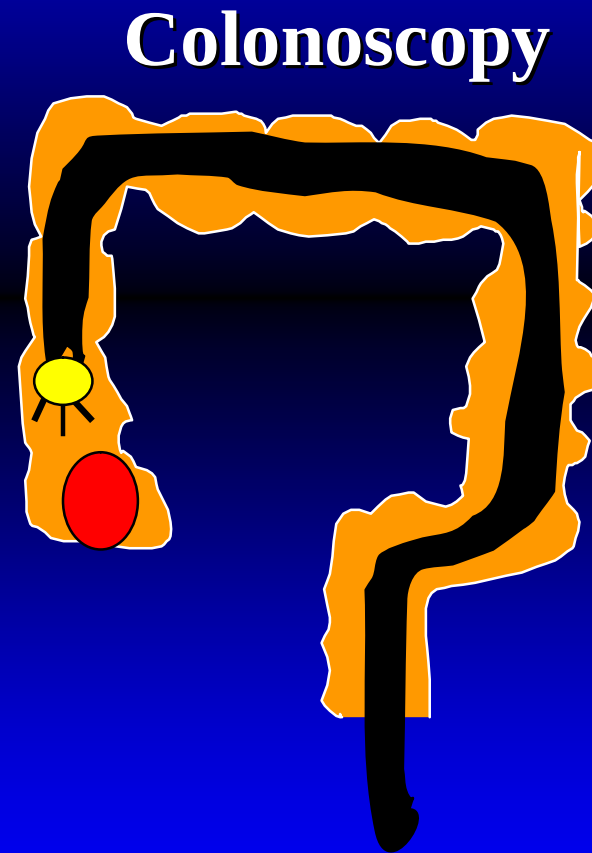
CORI: Lieberman et al; CGH 2005; 3: 798-805

Colonoscopy Utilization for Screening over time



GI Specialty Issues

- Quality
- Risk
- Resources
- Disruptive technologies



Colonoscopy Screening Studies (n > 1000)

- Studies: **2000-2004**
 - VA Cooperative Study ;NEJM: 2000; 343: 162-8 (n = 3121)
 - Indiana Study; NEJM 2000; 343: 169-74 (n = 1994)
 - CT Colonography studies (n = 2447) (Pickhardt, Rockey, Cotton)
 - Fecal DNA Study; NEJM 2004; 351: 2704-14 (n = 4404)
 - Spain, Am J Gastroenterol 2003; 98: 2648-54 (n = 2210)
- Studies: **2005-2006**
 - Women: (Schoenfeld) NEJM 2005; 352: 2061-8 (n = 1463)
 - Taiwan; Gastrointest Endosc 2005; 61: 547-53 (n = 1708)
 - Japan, Gastroenterology 2005; 129: 422-8
(n = 21,805 with iFOBT)
 - Seattle, JAMA 2006; 295: 2357-65 (N = 1244)
 - Poland, NEJM 2006; 355: 1863-72 (n = 50,148)
 - Germany (n = 1.14M)

Interval Neoplasia after Colonoscopy

Study	n	F/u CSP	0.3-0.9%	Cancer per 1000 person yrs of f/u
			Cancer	
Pabby, 2005	1905	0,1,4 yrs	0.7	2.8
Alberts, 2000	1303	0,1,3 yrs	0.7	2.4
Robertson, 2005	2915	0,3.7 yrs	0.9	1.7
Bertanolli, 2006	2035	0,1,3 yrs	0.3	1.7
Arber, 2006	1561	0,1,3 yrs	0.4	
Baron, 2006	2587	0,1,3 yrs	0.7	
VA, 2006	872	0, 2,5 yrs	0.9	

Pabby;Gastrointest Endosc 2005; 61:385-91
 Alberts; NEJM 2000; 342: 1156-62
 Robertson;Gastroenterol 2005; 129: 34-41

Bertagnolli; NEJM 2006; 355: 873-84
 Arber; NEJM 2006; 355: 885-95
 Baron, Gastroenterol 2006, 131:1674-82
 Lieberman, Gastroenterol 2007; 133:1077-85

Interval Cancer after Colonoscopy

0.3-0.9%

- New, fast growing lesions
 - Sawhney et al; Gastroenterology 2006; 131: 1700-5
- Incomplete removal
 - Pabby et al; Gastrointest Endosc 2005; 61: 385-91
- **Missed lesions**

per patient sensitivity of colonoscopy for adenoma >1cm		
Author	n	
Pickhardt (2003)	1233	87.5%
Cotton (2004)	600	96%
Rockey (2005)	614	98%

**2-12% of
polyps >1cm
are missed !!**

Interval Cancer after Colonoscopy

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Colonoscopy: Adverse Events

Study	Year	Setting	Rates
VACSP 380;	2002	Screening 30d f/u	0.3% Serious
Korman	2003	Amb Surg Centers	0.03% perforation
Bowles	2004	UK	0.13% perforation
Rathgaber	2006	Community	0.2% bleed
Ko	2007	Community	Minor/ED visits
Sharma	2007	Community	1.1% cardio-pulm
Levin	2006	HMO	0.5% serious 0.09% perforation 0.5% bleed

Colonoscopy

Depends on:

- Appropriate utilization
- High-quality care to ensure
- Low rate
- Low rate of incompletely removed lesions
- Low rate of adverse events

QUALITY



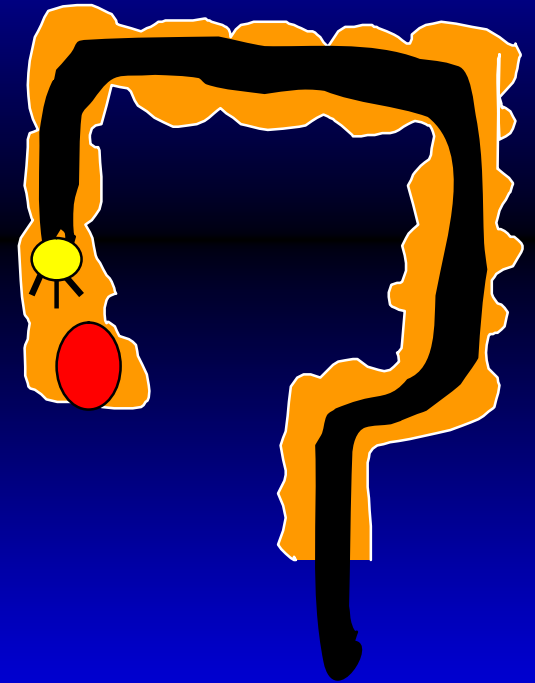
Rex et al; Am J Gastroenterol 2002; 97: 1296-1308

Rex, Faigel, Pike ASGE/ACG Task Force GIE 2006;63: S16-S28

Lieberman et al; Gastrointest Endosc 2007; 65: 757-66

Quality Indicators for Colonoscopy which should be monitored:

- Appropriate indication
- Bowel Prep quality
- Cecal Intubation rate
- Withdrawal time from cecum
- Polyp descriptors and retrieval
- Adenoma detection rate
- Appropriate surveillance intervals
- Adverse events/Unplanned events





*clinical
outcomes
research
initiative*

www.corl.org

National
Endoscopic
Database

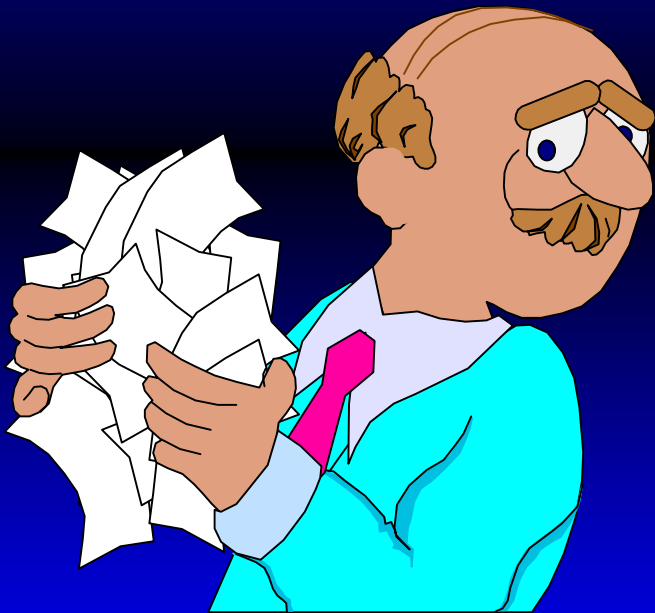


CORI

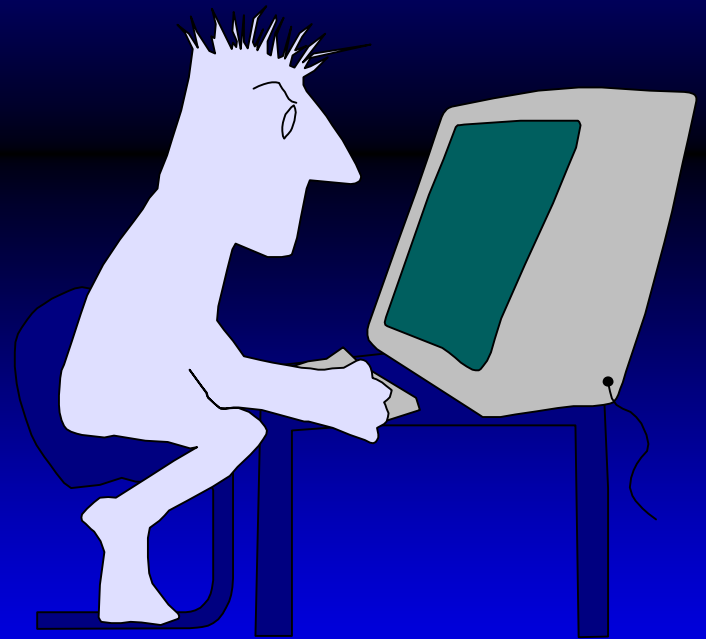
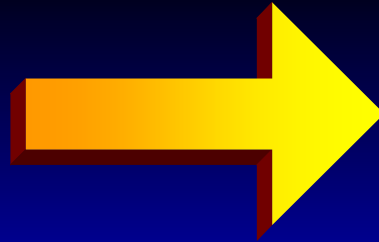
- **CONCEPT:**
 - Collect endoscopic practice data from diverse clinical practice settings throughout the United States
- **GOAL:**
 - Measure outcomes related to endoscopy
- **FUNDING:**
 - NIDDK since 1999

CORI: Paper To Computer

Dictation

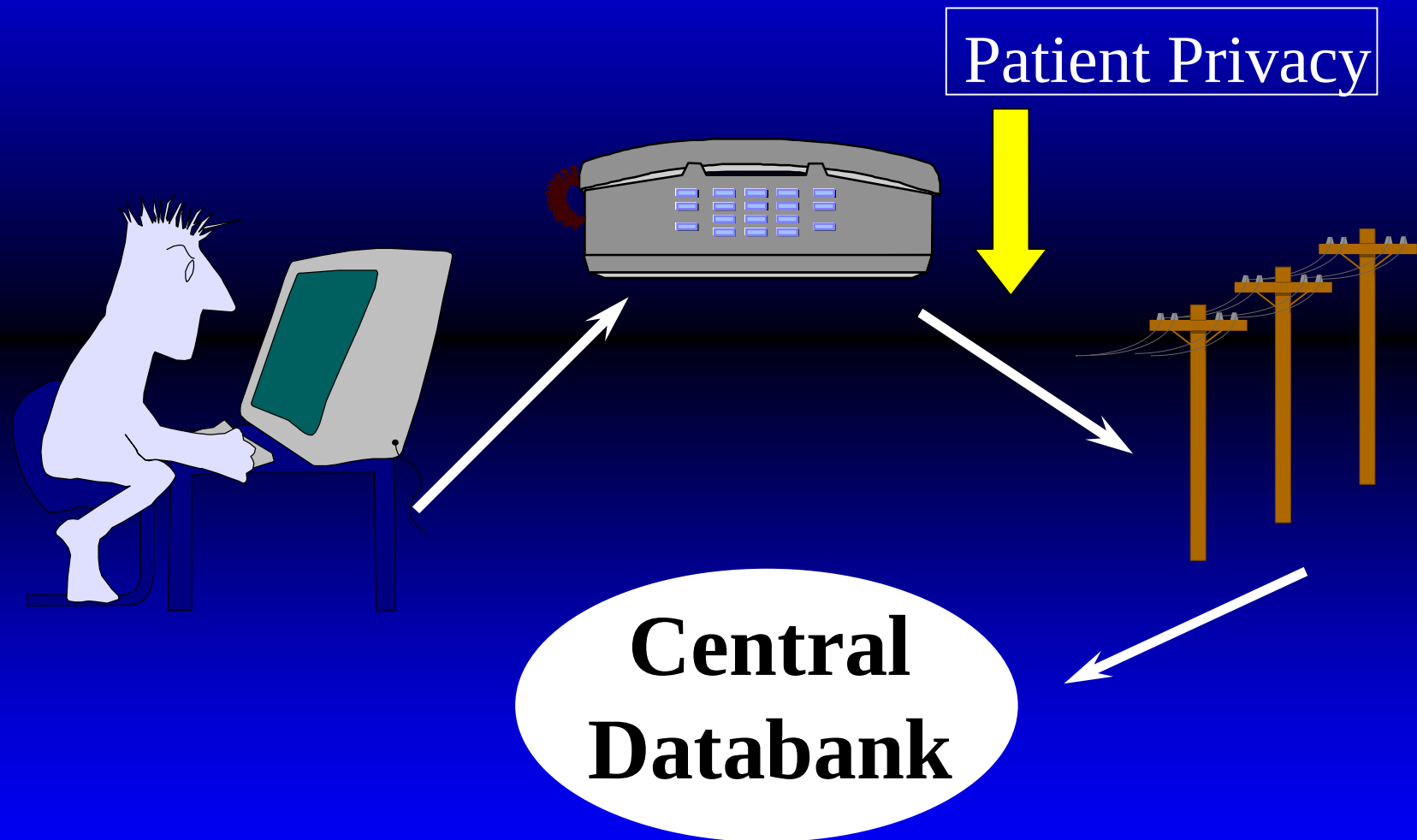


Hand-written

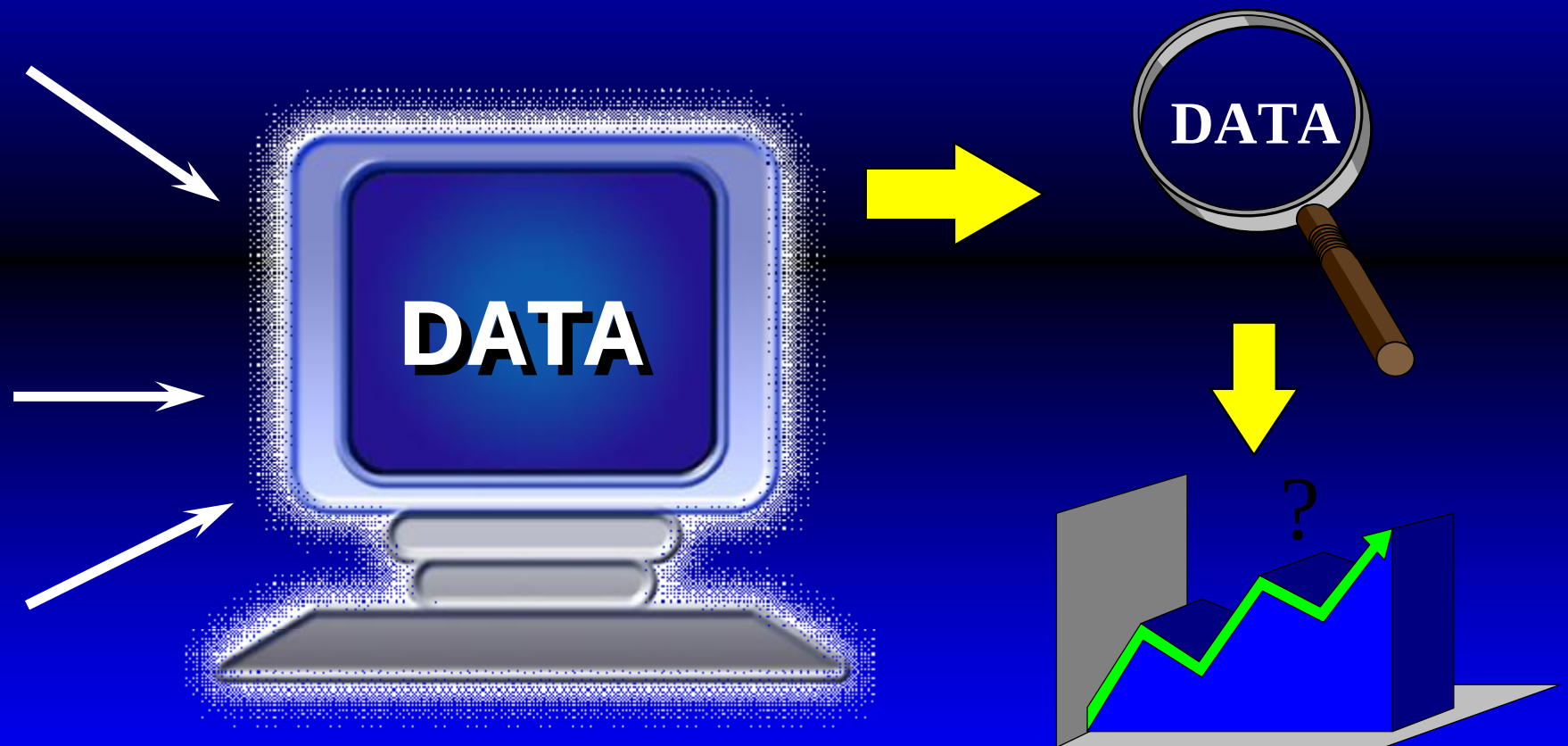


**Computerized endoscopy
report generator**

Data Collection/Transmission



Central Data Bank



Current Active Sites (n = 72)

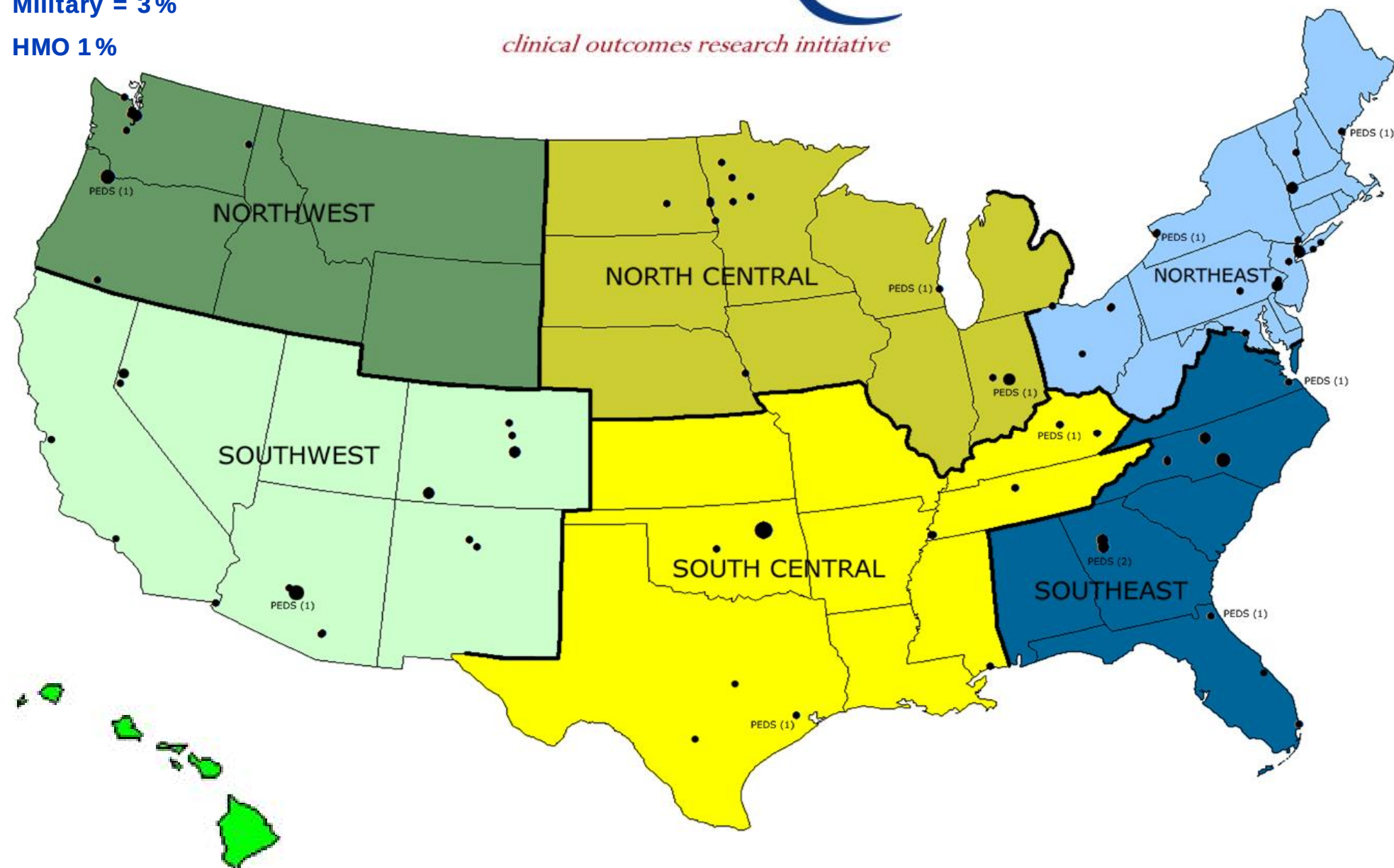
Community 68%

Academic 17%

VA 11%

Military = 3%

HMO 1%

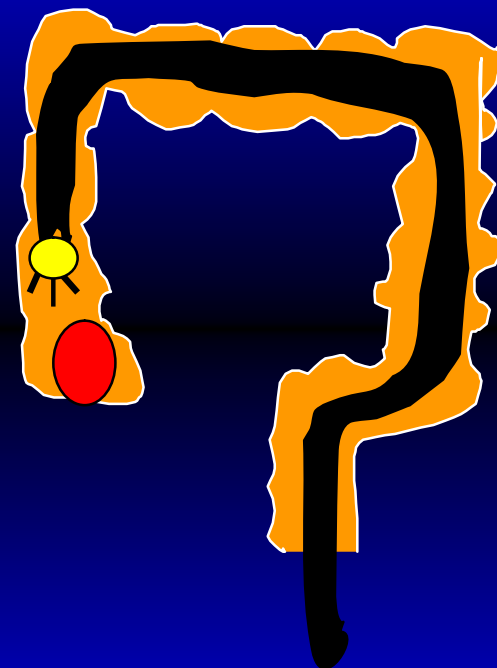


Colonoscopy Quality

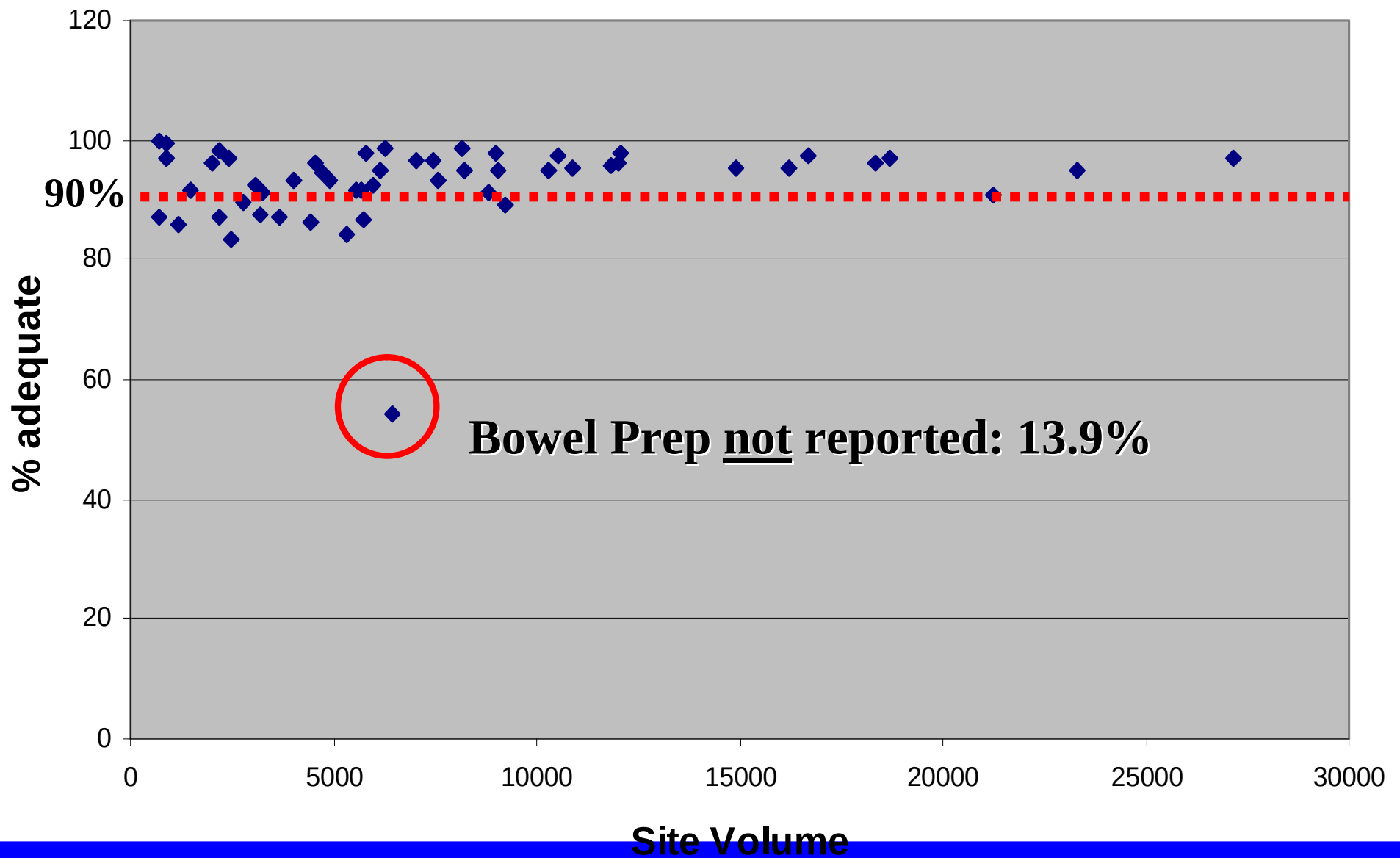
How are doing?

n = 438,521

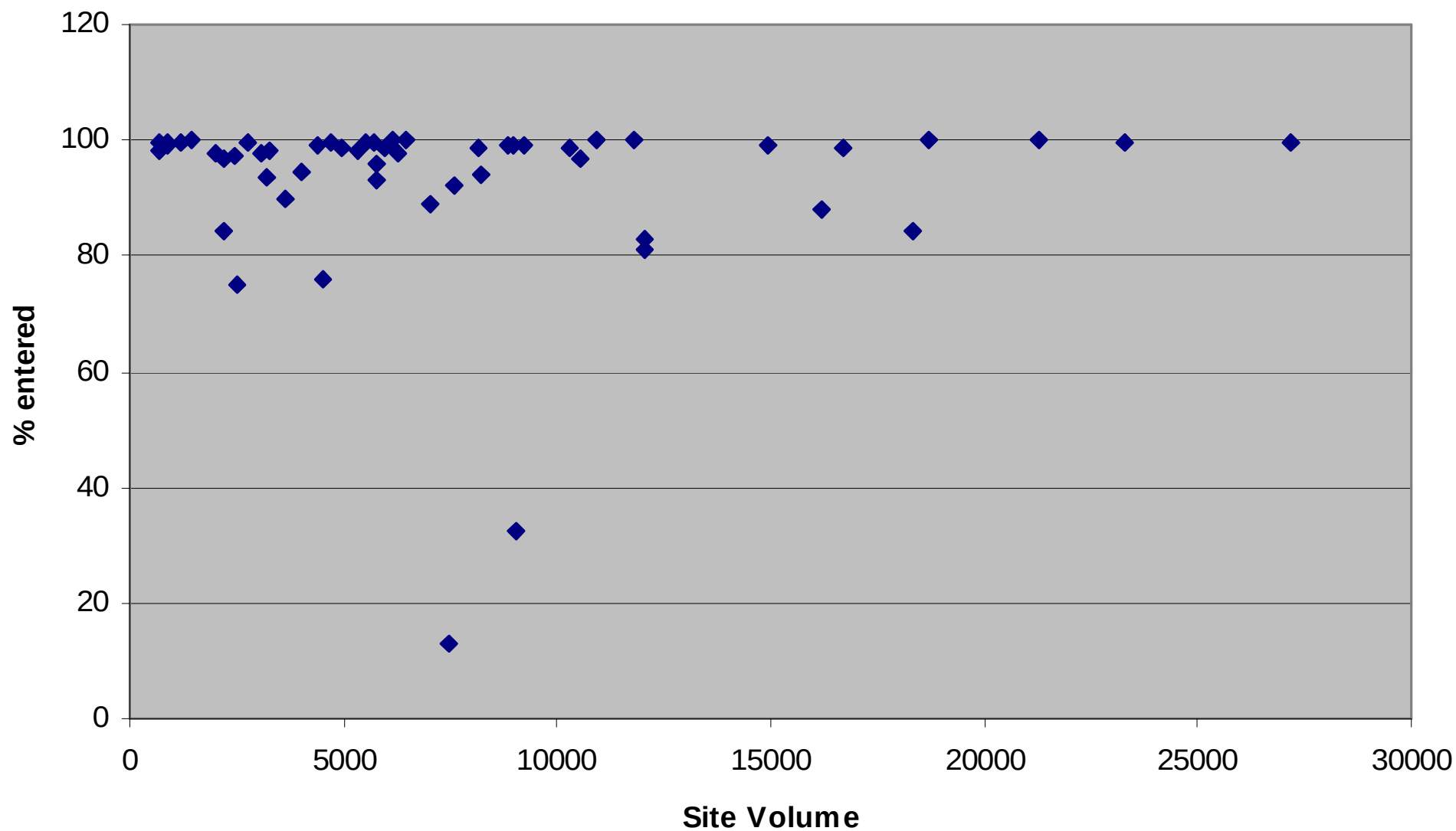
2004-2006



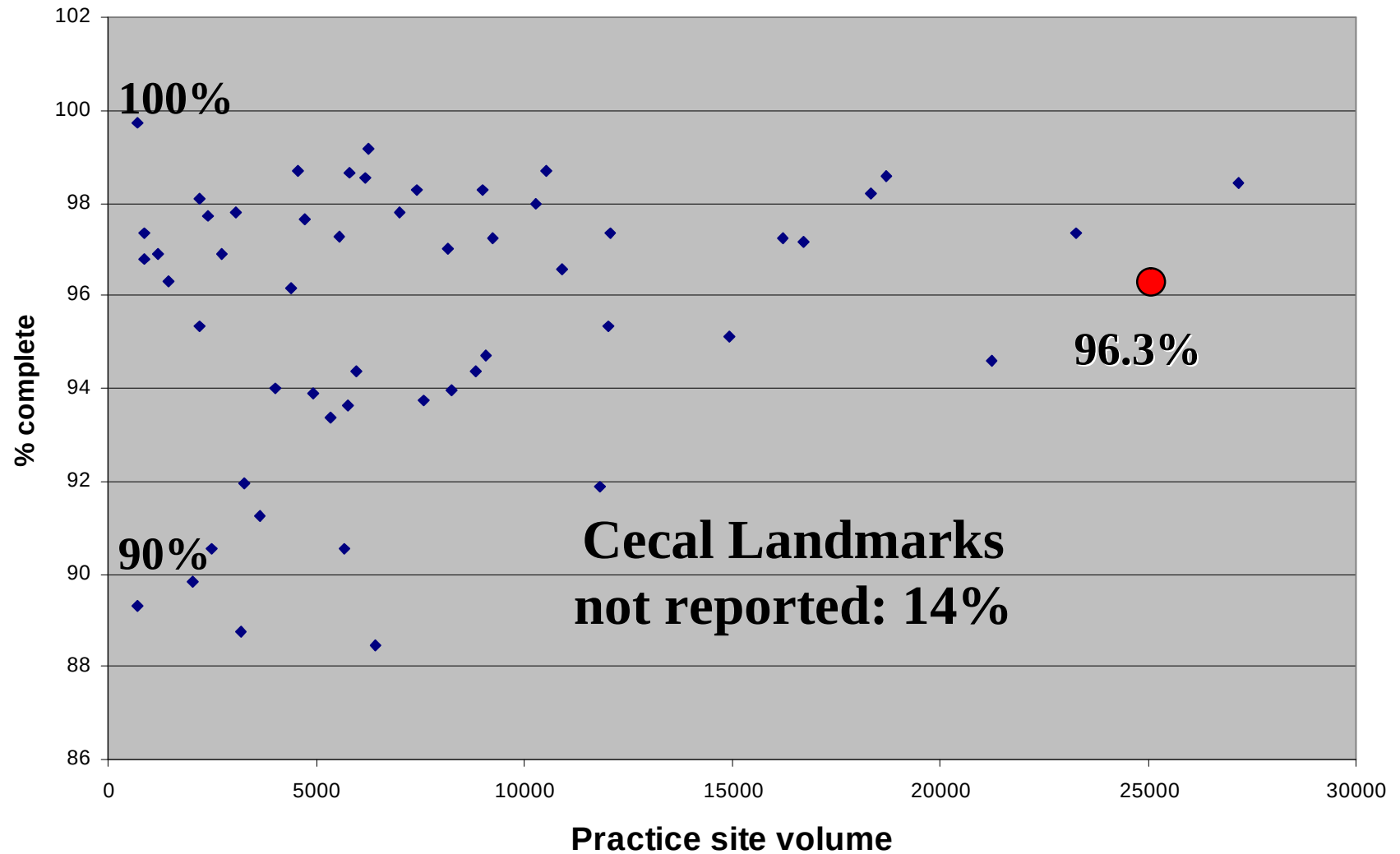
Adequate Prep Rates by Site Volume



Co-Morbidity: ASA Entry



Cecal intubation rates by site volume

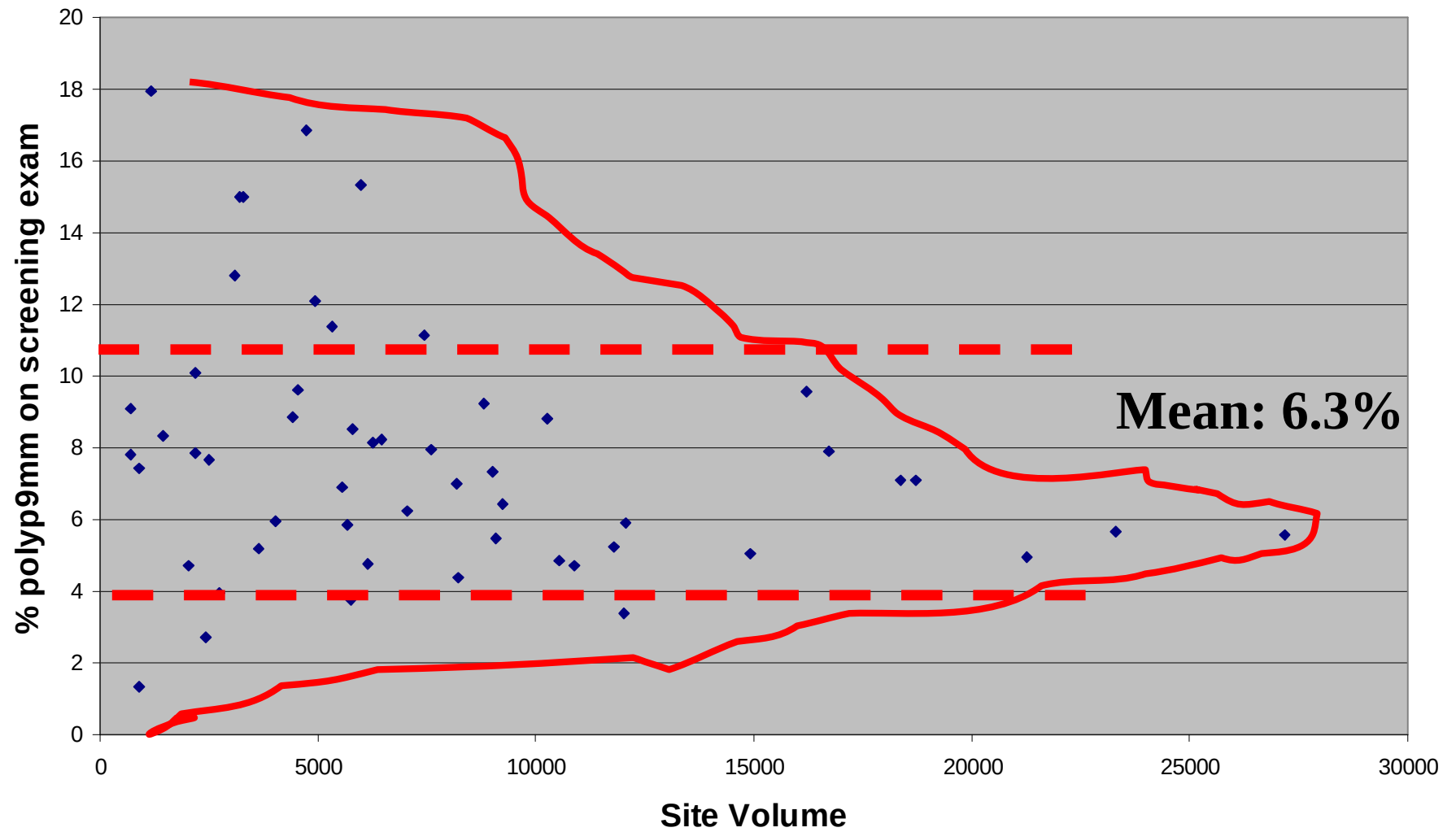


Quality Indicators: Polyp Descriptors 258,601 polyps

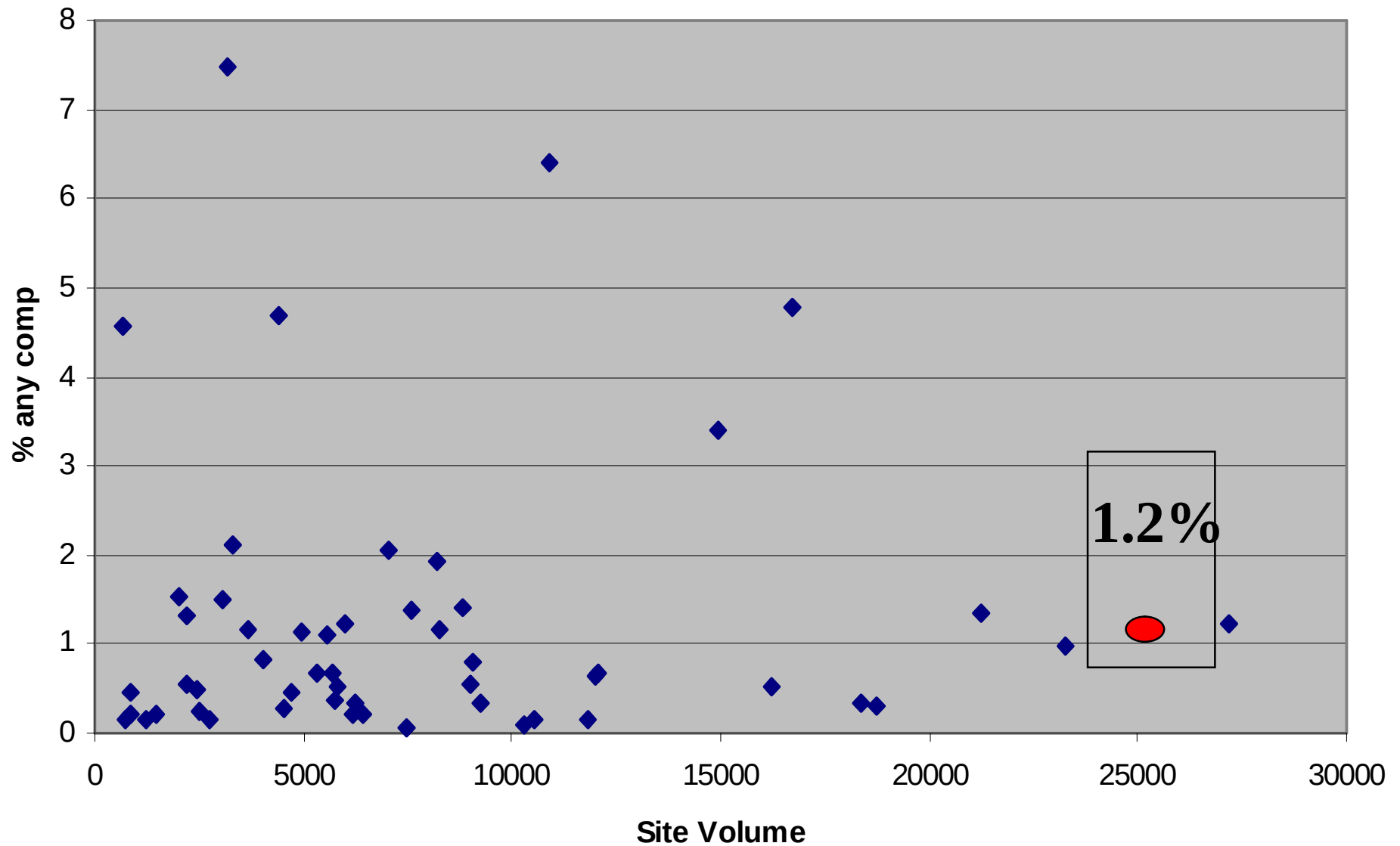


- Polyp size reported
 - **NO:** **11.9%**
- Morphology reported (flat, sessile, pedunculated):
 - **NO:** **14.7%**
- Retrieval Reported
 - **NO:** **4.5%**

Scatterplot- Site Volume vs Polyp > 9mm detection on screening exams



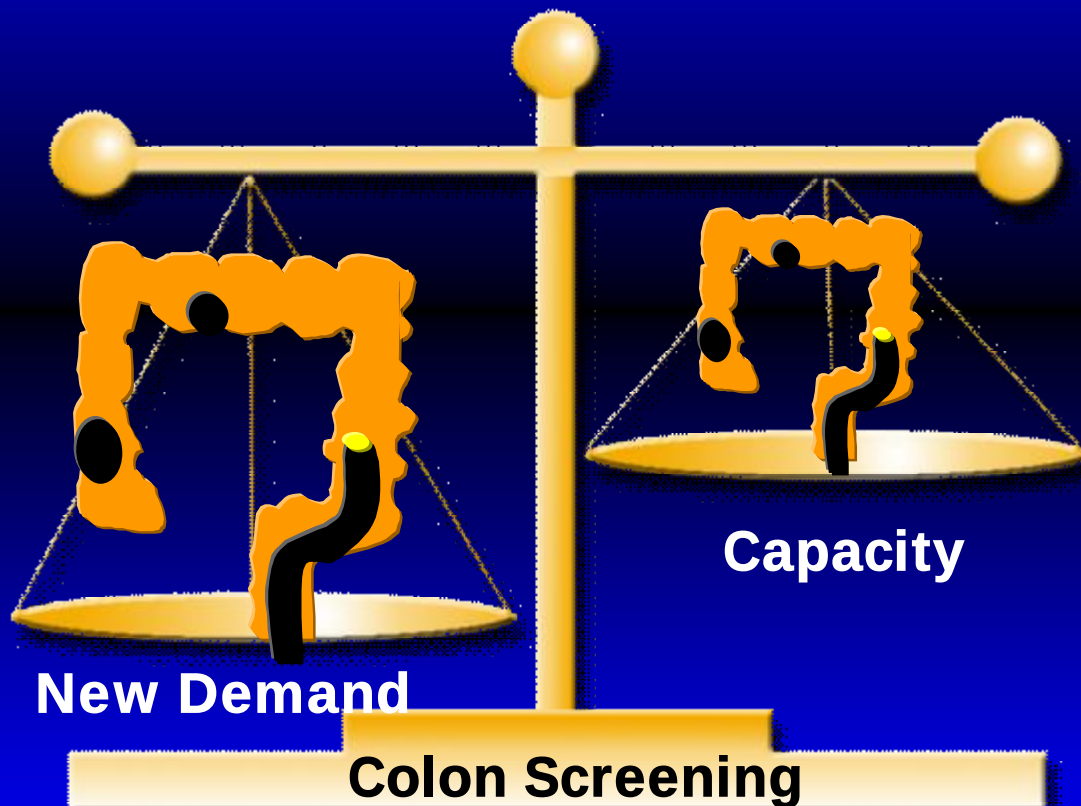
Immediate Complication Rates



Brave New World

- Pay for performance
- Health savings account
- Payers who demand quality data

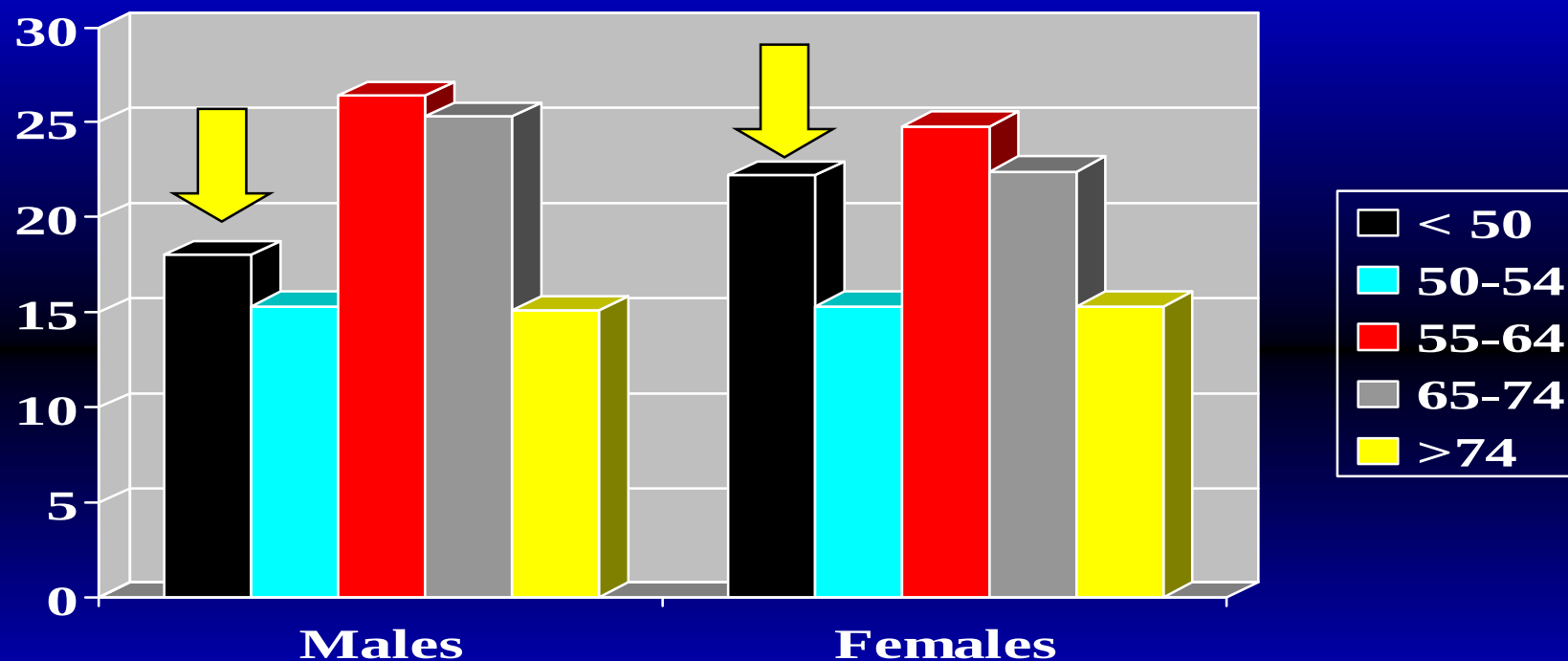
Resources: Supply and Demand



Appropriate Utilization:

- Screening interval
- Surveillance intervals
- Evaluation of symptoms

Patient Demographics



***Among adults who have colonoscopy,
20% are < 50 years old**

Colonoscopy Utilization: < 50 years

Procedure	Women	Men
<u>Indication</u>	<u>N = 16,257</u>	<u>n = 13,510</u>
Ave Risk Screen	1%	2%
(+) FOBT	8%	10%
IBS	29%	18%

Resources for Surveillance

- Colon surveillance represents 25% of all colonoscopies in patients > 55 yrs
- Evidence for over-utilization from surveys
 - > 50% of endoscopists recommend surveillance at 3 years or less for small adenomas despite guidelines
 - Many physicians in US perform surveillance colonoscopy for **hyperplastic** polyps

Lieberman et al; CGH 2005; 3: 798-805

Mysliwiec et al; Ann Intern Med 2004; 141:264-71

Boolchand et al; Ann Intern Med 2006; 145: 654-9

Winawer et al; Gastroenterol 2006; 130: 1872-85

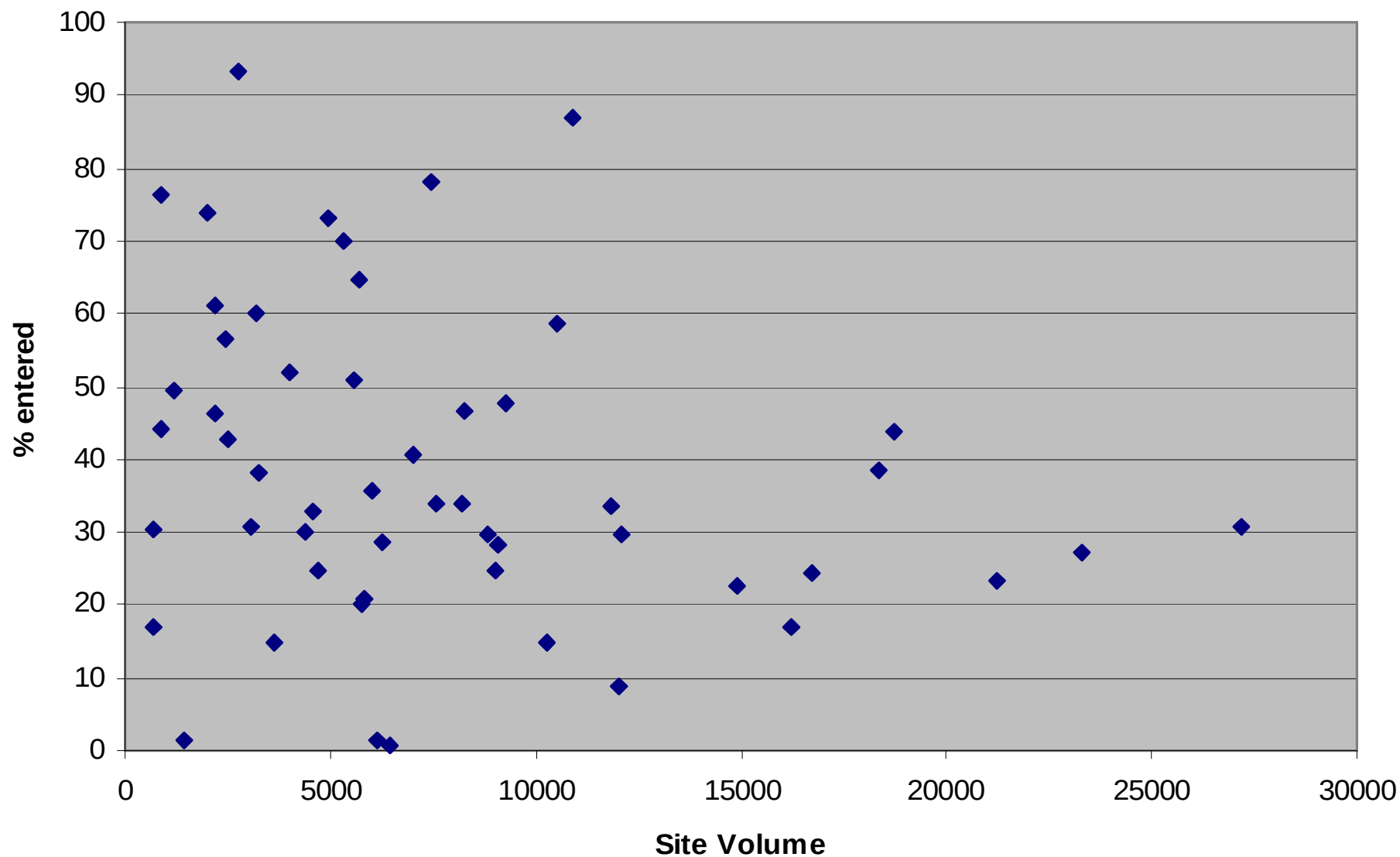
Rex et al; Gastroenterol 2006; 130: 1865-71

Surveillance Guideline

Baseline Finding	Interval*
Hyperplastic polyps (rectum/sigmoid)	10 yrs
1-2 Tubular adenomas <1cm	5-10 yrs
≥ 3 adenomas	3 yrs
Tubular ad > 1cm	
Villous adenoma	
High-grade dysplasia	
>10 adenomas	< 3 yrs
Piecemeal resection	2-6 mos
Cancer	1 year

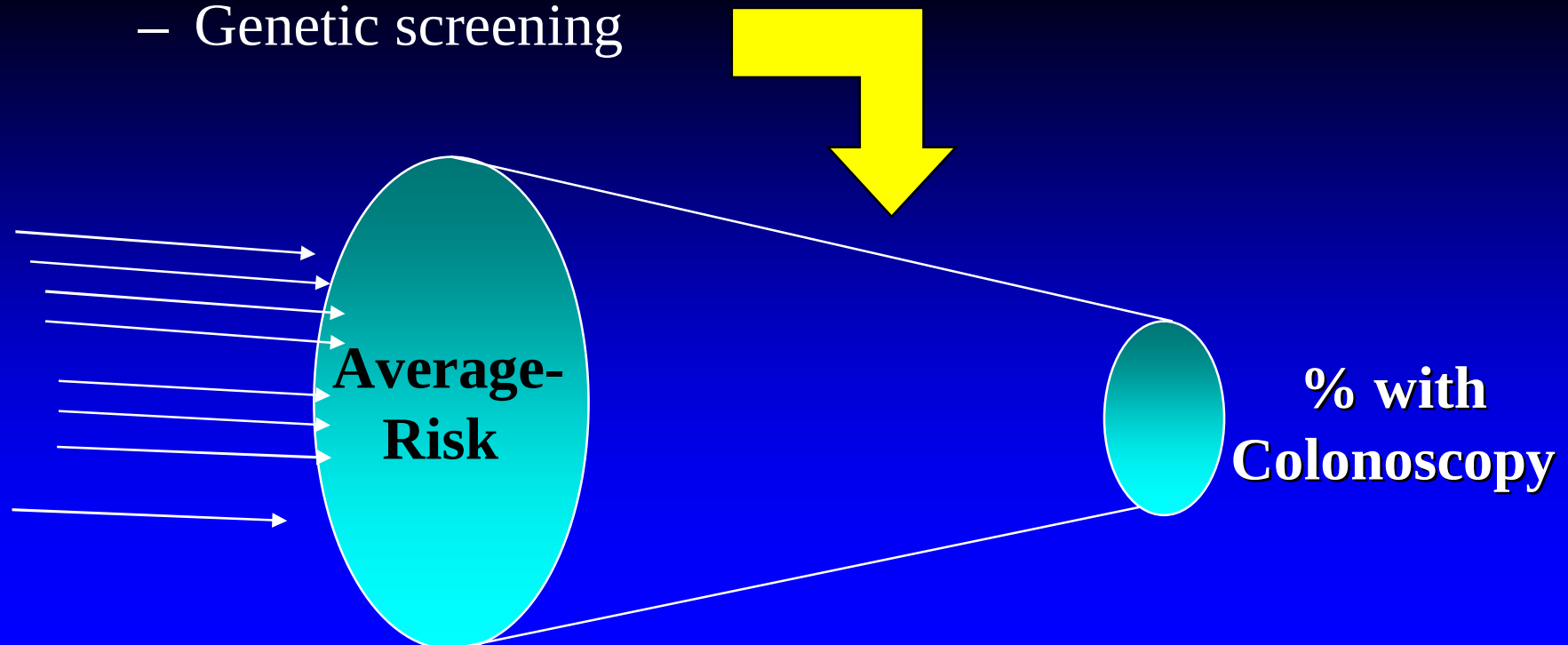
*Assumes complete exam with adequate prep

Surveillance: Report of Prior Endoscopy



Resources

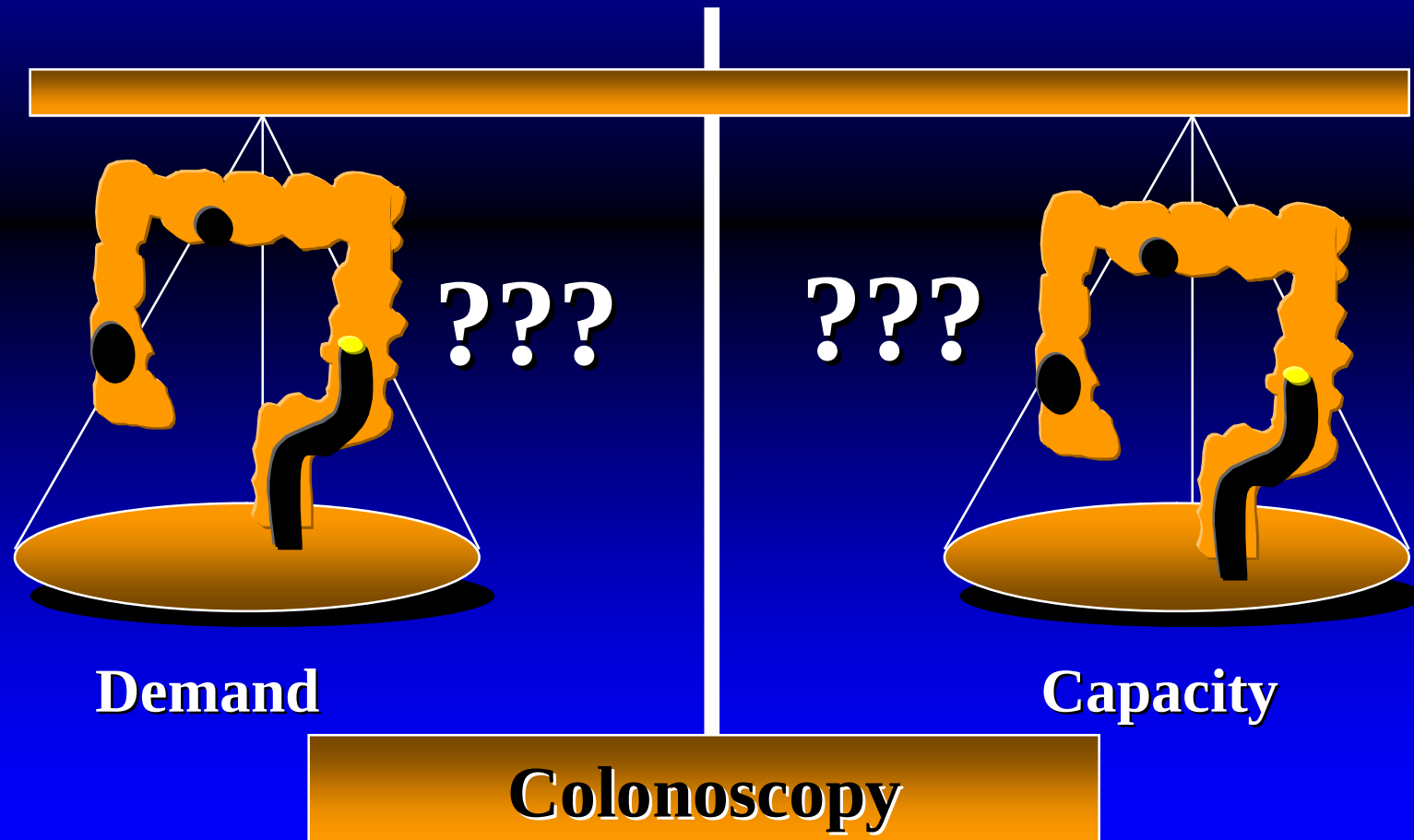
- Utilization
- Changes in practice may change demand
 - CT Colonography
 - Genetic screening



Resources

- Utilization
- Changes in Practice
- New endoscopists
 - Increase training
 - Physician extenders under supervision

Resources

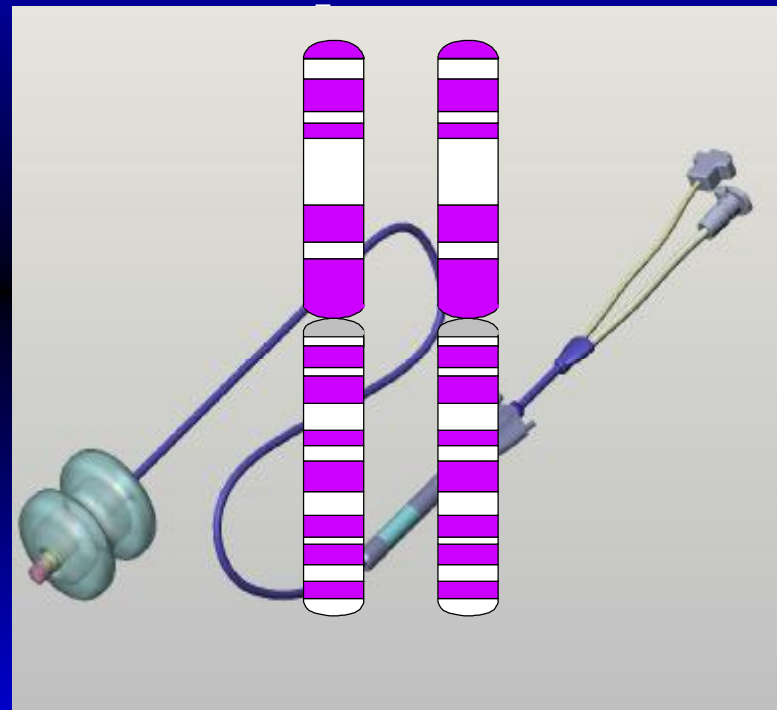


Future – Disruptive Technologies



GI Specialty Issues

- Quality
- Risk
- Resources
- **Disruptive technologies**



Pickhardt;NEJM 2003; 349: 2191; Cotton; JAMA 2004; 291:1713-9;
Rockey: Lancet 2005;365: 305-11

CT Colonography

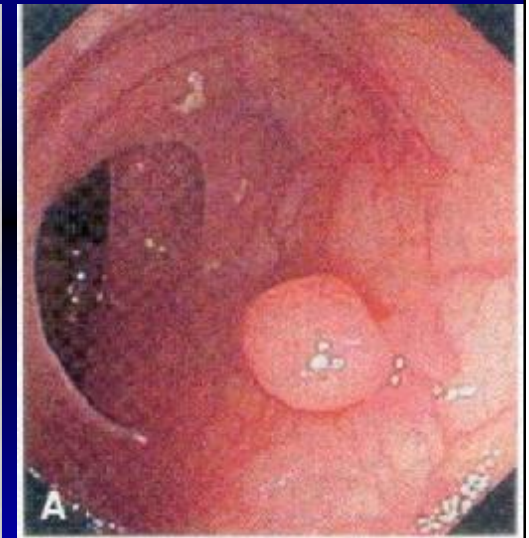
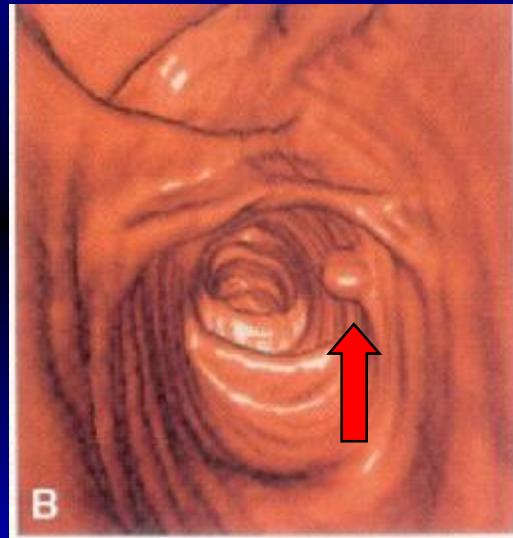


GI ISSUES

- 1) Impact on GI practice
- 2) Should GI physicians perform CT?
- 3) If so, training, credentialing issues

CT Colonography: Issues

- Management of findings
- Inter-observer variability
- Bowel Prep
- Radiation
- Extracolonic findings



Low Resolution CTC

Soetikno et al; JAMA 2008; Lieberman; JAMA 2008

Chromoendoscopy



Submucosal adenocarcinoma of colon

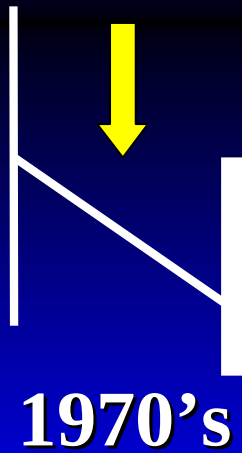


Indigo carmine

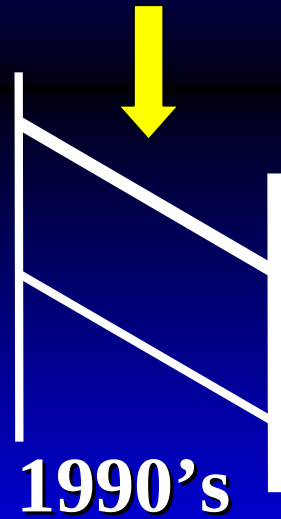
Raising the bar



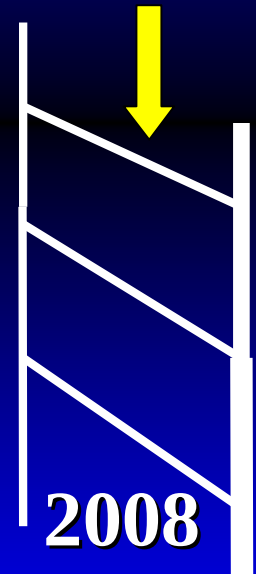
**Colon
Cancer
Detection**



**Colon Cancer
Prevention**



**Colon Screening
Quality**



Challenges for GI Specialists

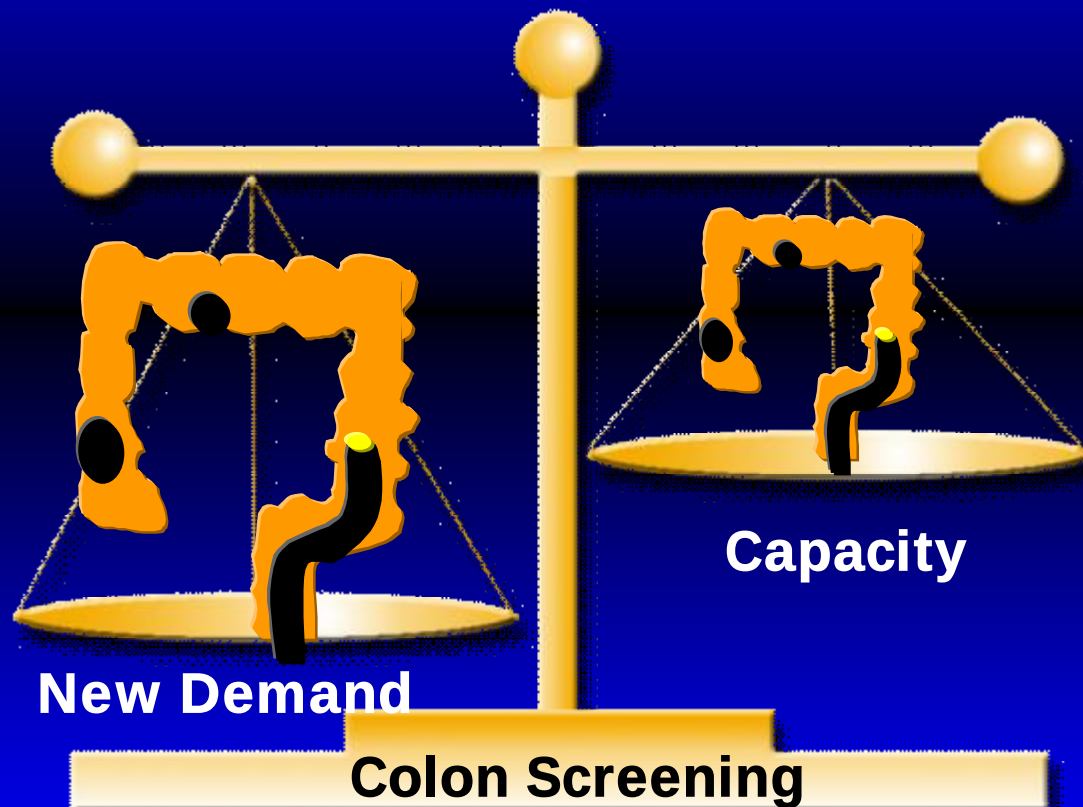
- Document and monitor quality
- Document appropriate utilization



**Screening can prevent
Colon Cancer.....
...but only if it is done well**



Resources: Supply and Demand



Utilization issues

Changes in practice

- CT Colonography
- Genetic
- Screening interval
- Surveillance intervals
- Evaluation of symptoms

Resources

- Utilization
- Changes in practice may change demand
 - CT Colonography
 - Genetic screening

