

A scenic view of a rocky coastline with turquoise water and a large tree in the foreground. The text is overlaid on the left side of the image.

2023 NCSCG
20TH ANNUAL
GI SYMPOSIUM

Colorectal Cancer

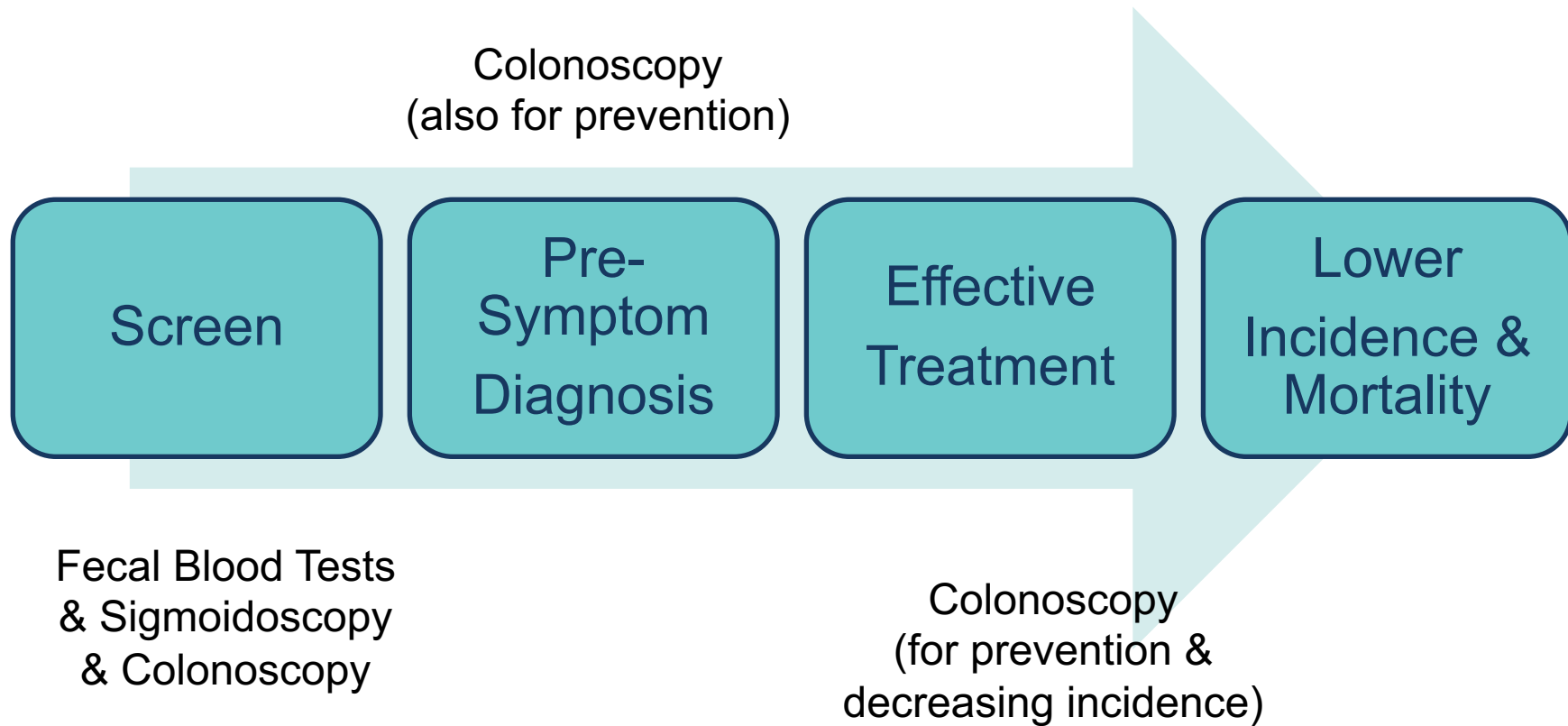
NordICC at 10 years: Screening Colonoscopy is Dead! Long-live Screening Colonoscopy!
The quest for maximal ADR: Saving lives or overdiagnosis?
Artificial Intelligence and Colonoscopy Quality: Problem solved (not solved)

Douglas Corley, MD, PhD

Kaiser Permanente, San Francisco Medical Center

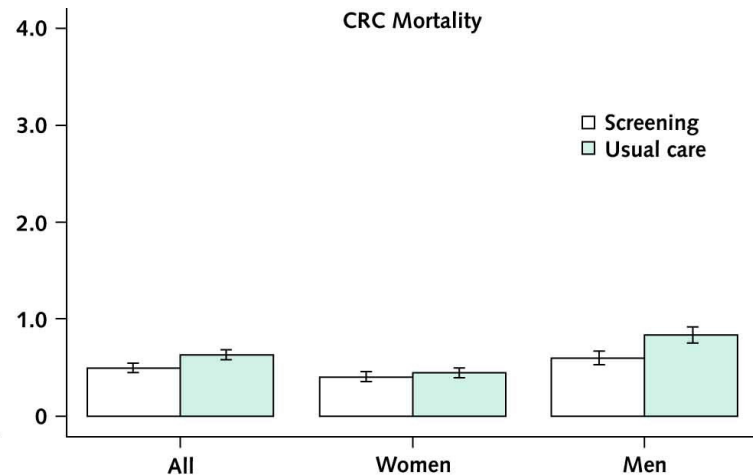
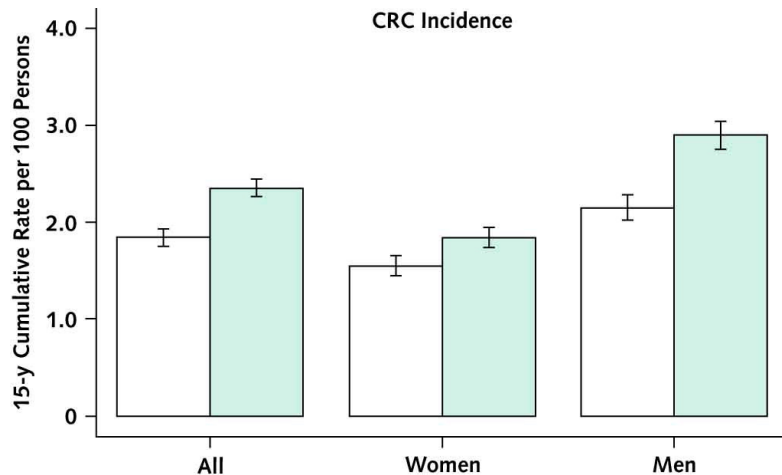
Director of Delivery Science & Applied Research, The Permanente Medical Group

How do screening tests save lives?

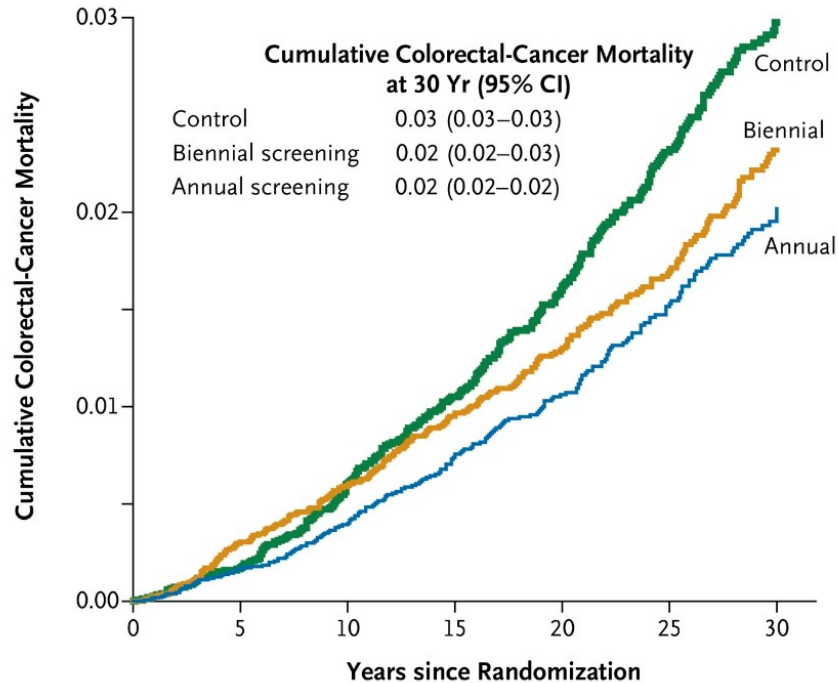


Colorectal Cancer Screening Works: RCTs of Sigmoidoscopy and Fecal Blood testing

- Pooled Randomized Sig Trials at 15 years:
- 21% lower incidence & 20% lower mortality
- Via next-step colonoscopy



Fecal blood tests also work – via colonoscopy next step diagnosis/treatment



No. at Risk

Control	14,497	13,103	11,320	9157	6741	4450
Biennial screening	14,635	13,243	11,445	9323	6802	4583
Annual screening	14,658	13,294	11,437	9219	6802	4498

The title perhaps should have said...

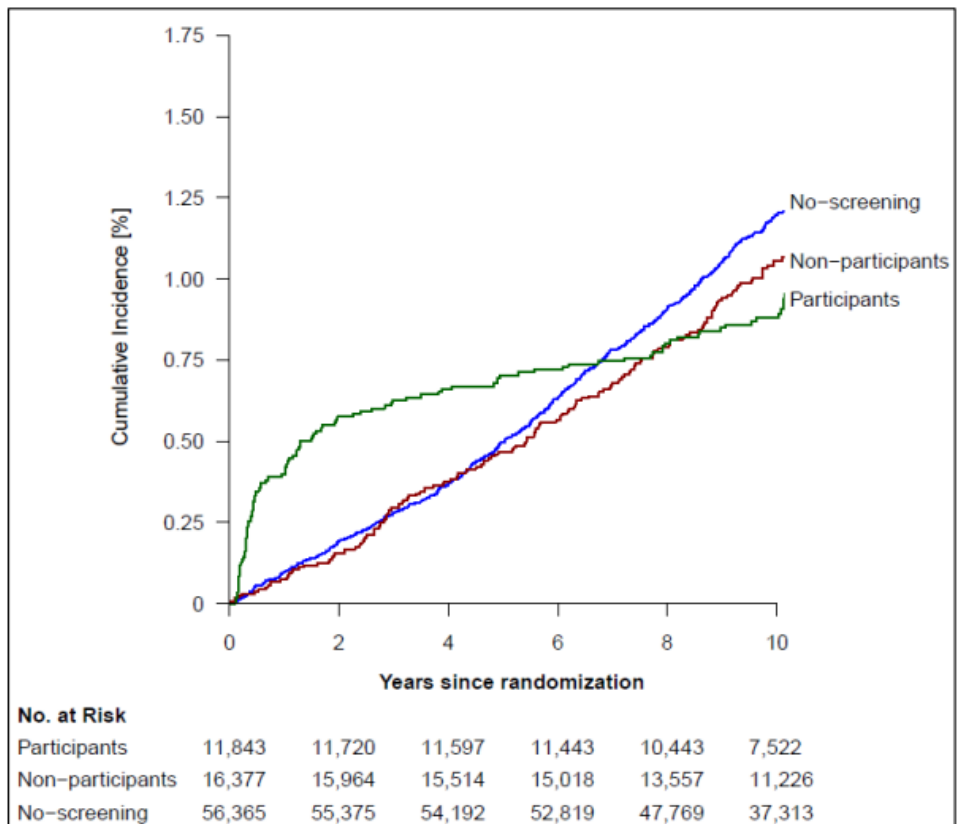
Invitation to Effect of Colonoscopy Screening on Risks of Colorectal Cancer and Related Death

Michael Bretthauer ¹, Magnus Løberg ¹, Paulina Wieszczy ¹, Mette Kalager ¹, Louise Emilsson ¹, Kjetil Garborg ¹, Maciej Rupinski ¹, Evelien Dekker ¹, Manon Spaander ¹, Marek Bugajski ¹, Øyvind Holme ¹, Ann G Zauber ¹, Nastazja D Pilonis ¹, Andrzej Mroz ¹, Ernst J Kuipers ¹, Joy Shi ¹, Miguel A Hernán ¹, Hans-Olov Adami ¹, Jaroslaw Regula ¹, Geir Hoff ¹, Michal F Kaminski ¹,
NordICC Study Group

Affiliations + expand

PMID: 36214590 DOI: 10.1056/NEJMoa2208375

Those who accepted screening appeared higher risk and their risk was “flat” post-screening



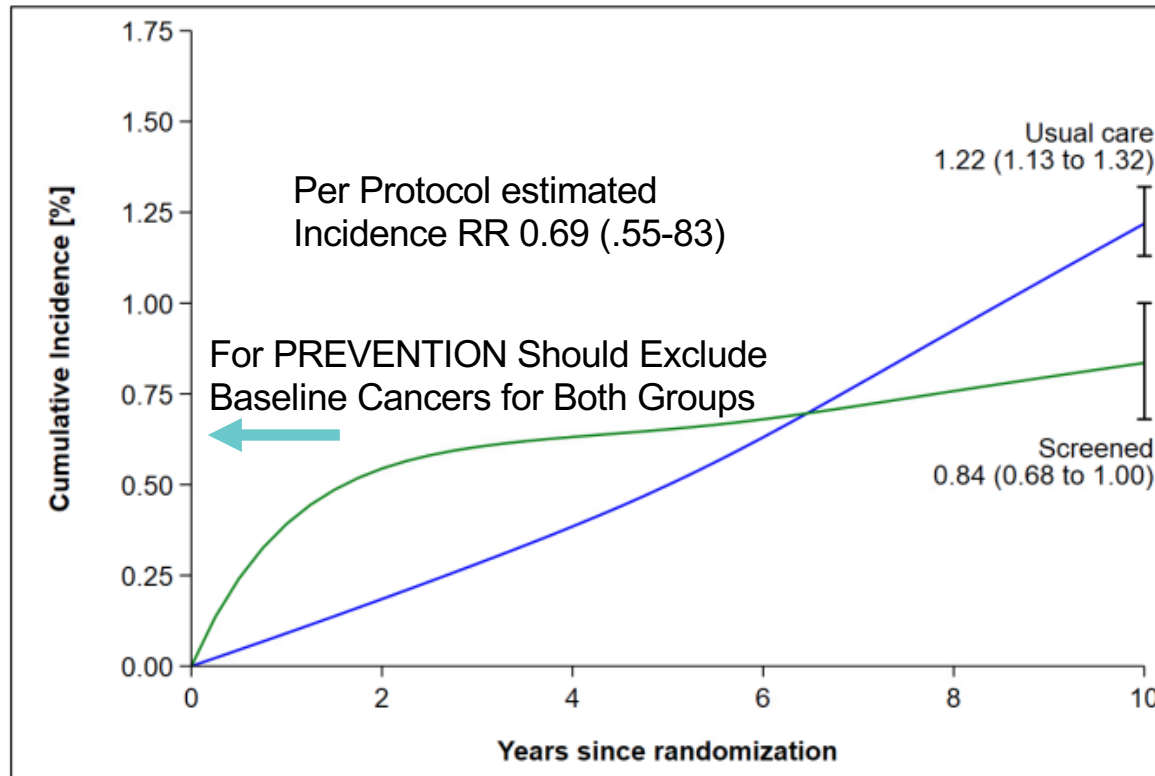
Incidence
RR 0.82 (.70-.93)

Mortality
RR 0.90 (0.64-1.16)

NNT incid 455

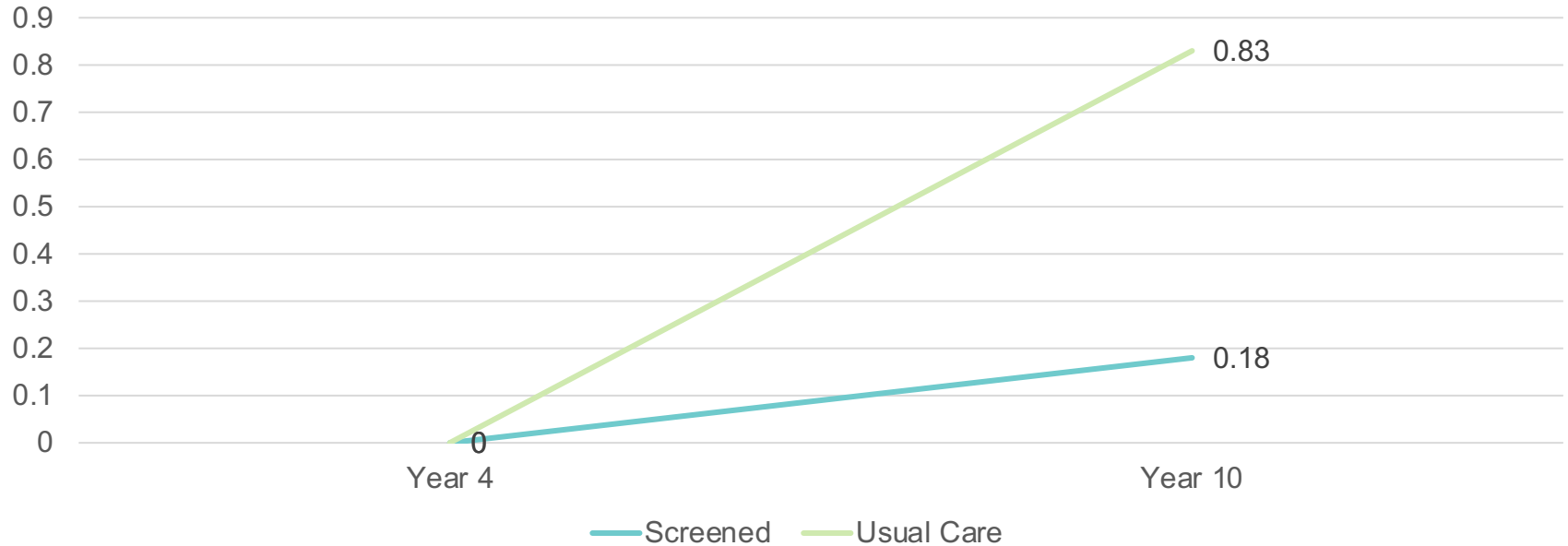
All cause
RR 0.99 (0.96-1.04)

Adjusted per-protocol analysis suggested effectiveness among those screened

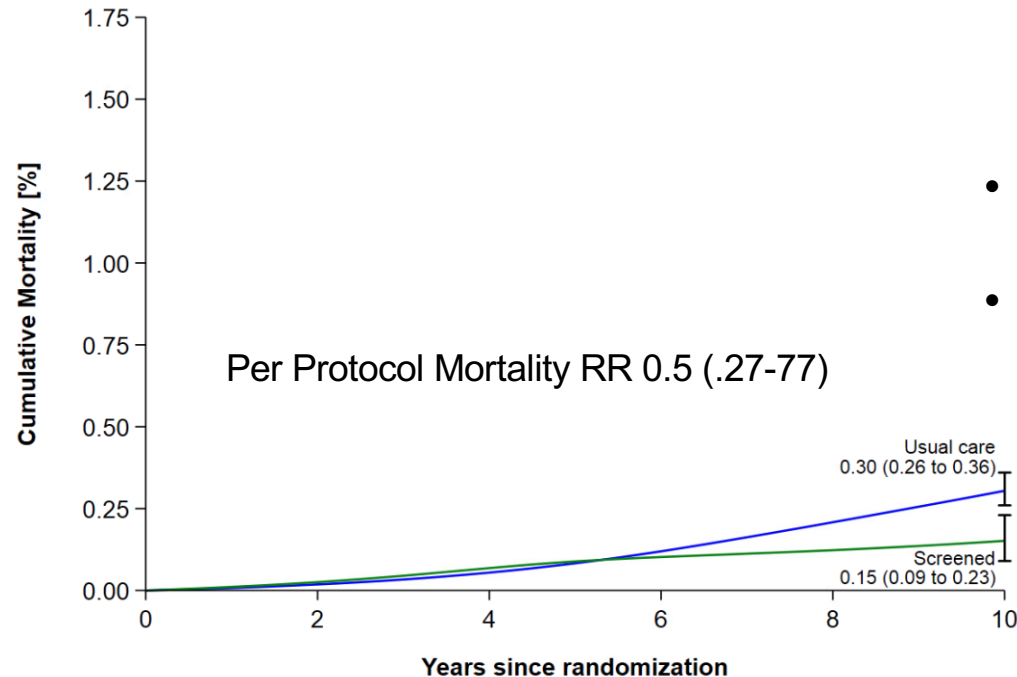


Cumulative Incidence – Eliminating Cancers That Couldn't be Prevented by Polypectomy

Prevention of CRC

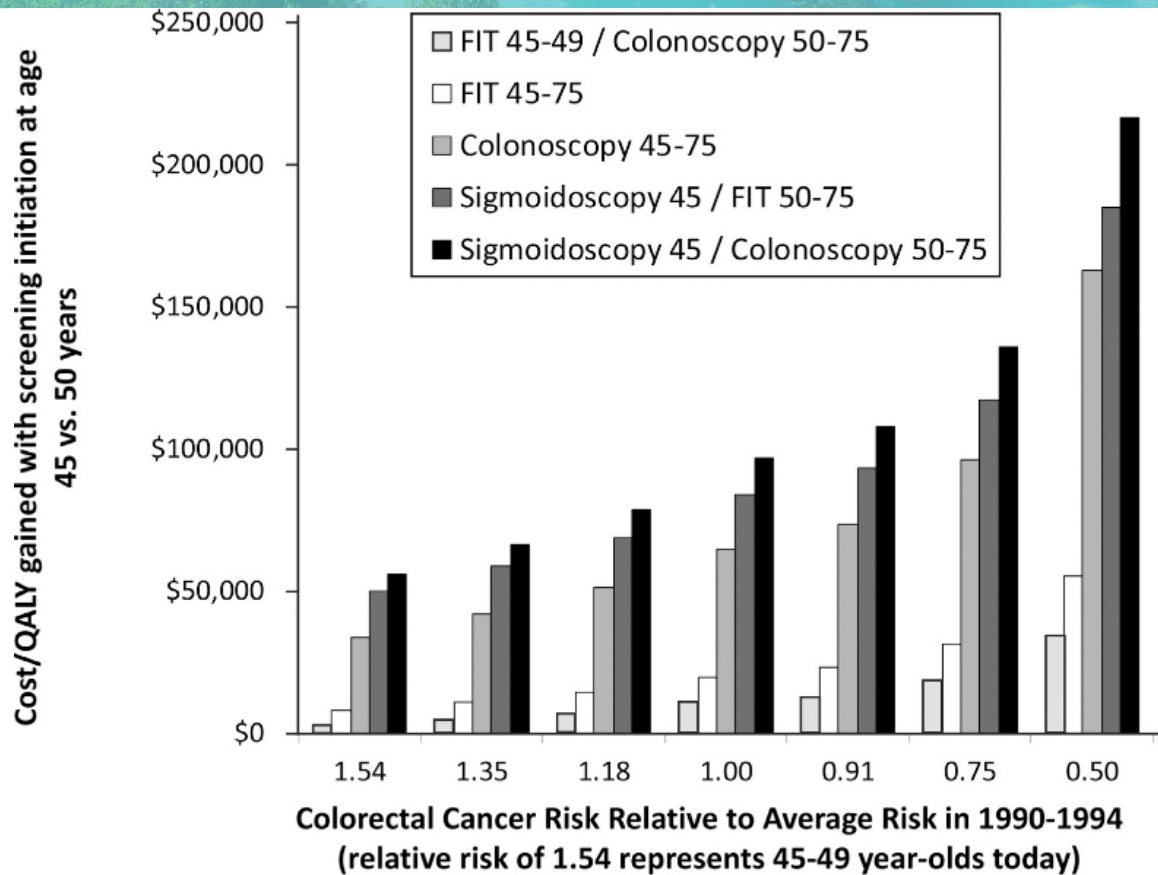


Mortality pattern similar to expected in adjusted analysis per protocol



- Mortality Evaluation
 - Too short (need 15 years)
 - Too small (incidence lower than expected)
- Incidence Evaluation underestimate
 - needed to exclude prevalent CAs
- Effectiveness, not efficacy
 - Efficacy main interest to patients

Extrapolating to a lifetime can be of help



Multiple long-term models with best-available data suggest benefit

Part I

FULL TEXT ARTICLE

Cost-Effectiveness of Current Colorectal Cancer Screening Tests



Uri Ladabaum MD, MS

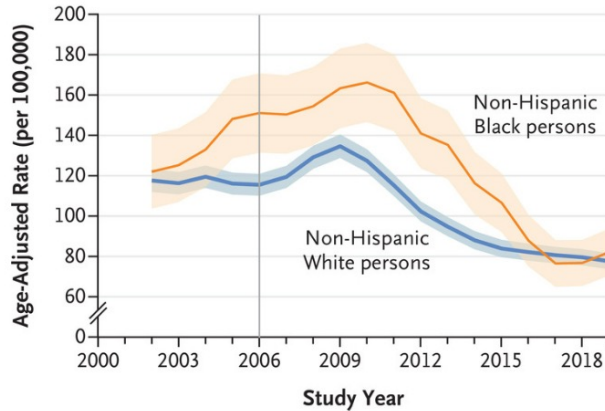
Gastrointestinal Endoscopy Clinics of North America, 2020-07-01, Volume 30, Issue 3, Pages 479-497, Copyright © 2020 Elsevier Inc.

“Multiple cost-effectiveness analyses of colorectal cancer (CRC) screening performed around the world under a wide range of assumptions suggest that all CRC screening modalities are highly cost-effective”

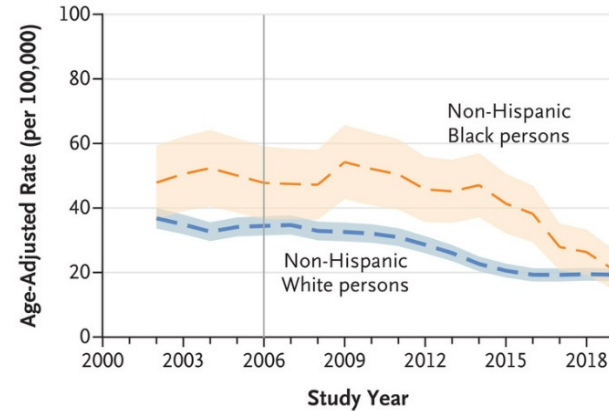
Increased CRC Screening Associated With Marked Reductions in CRC Incidence, Mortality & Disparities

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D Overall Incidence of Colorectal Cancer (any stage)



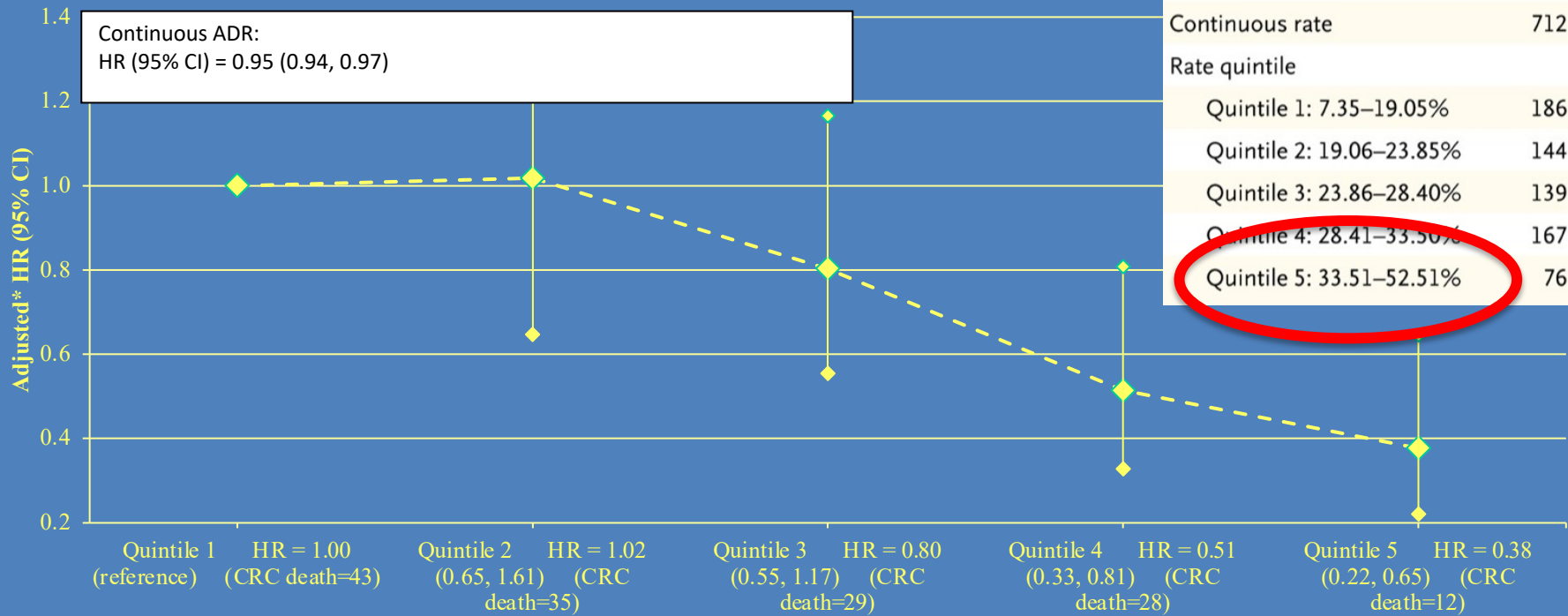
E Death from Colorectal Cancer



The quest for maximal ADR: Saving lives

Part 2

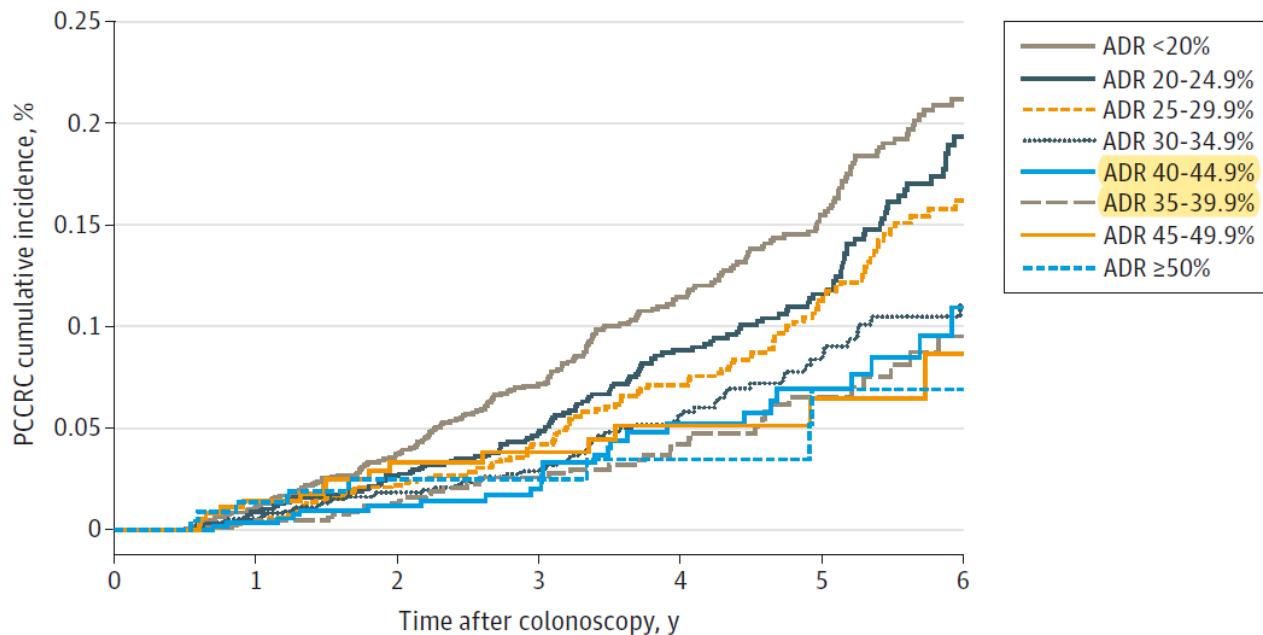
Decreased risk of cancer death



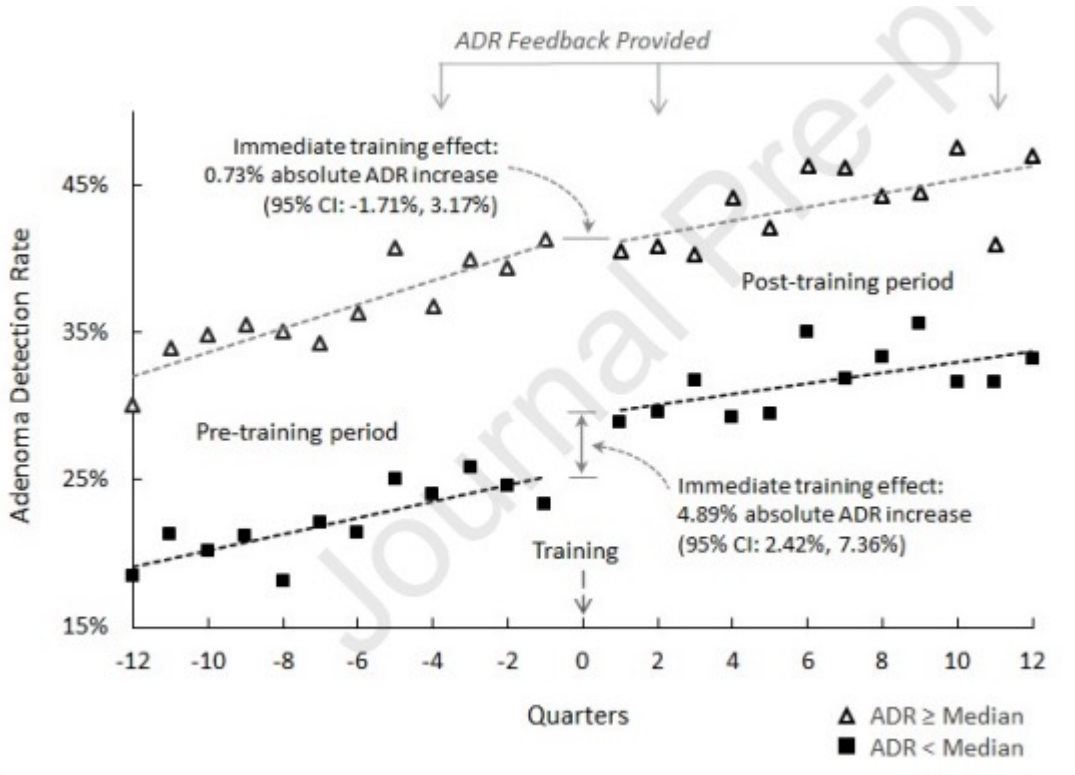
Adenoma Detection Rate	Interval Cancer
	<i>no. of cases</i>
Continuous rate	712
Rate quintile	
Quintile 1: 7.35–19.05%	186
Quintile 2: 19.06–23.85%	144
Quintile 3: 23.86–28.40%	139
Quintile 4: 28.41–33.50%	167
Quintile 5: 33.51–52.51%	76

There is strong association of post-polyp risk by physician ADR, especially at lower ADRs

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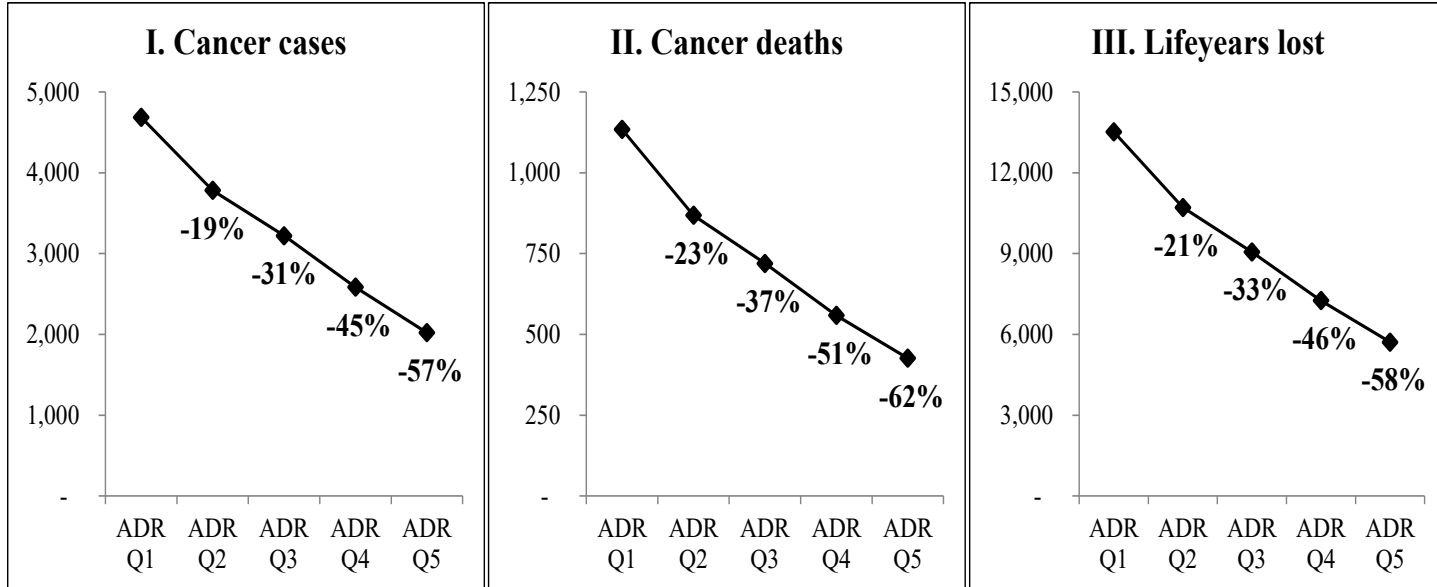


Question: Can a colonoscopy quality feedback plus a regional training decrease variation and improve patient outcomes?

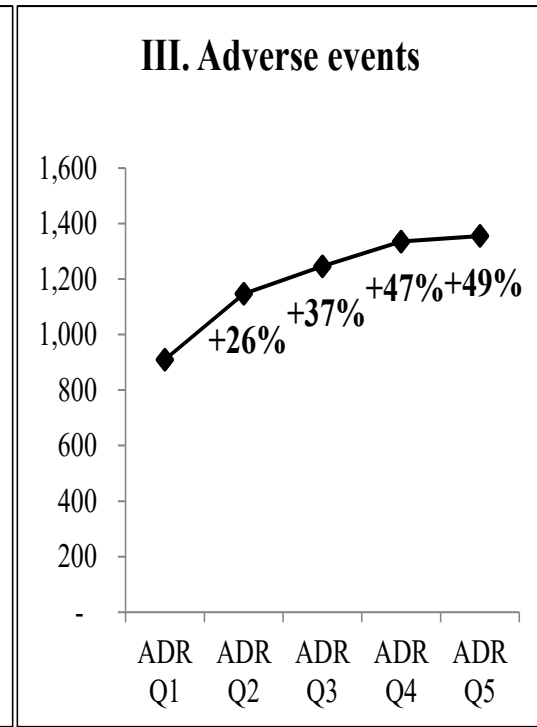
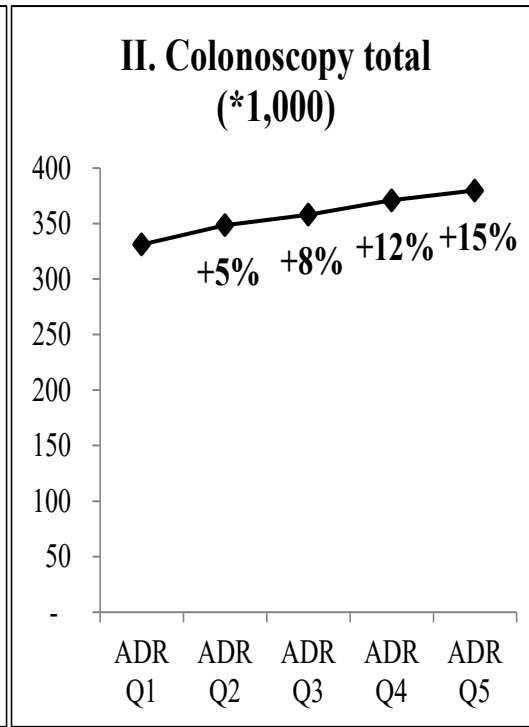
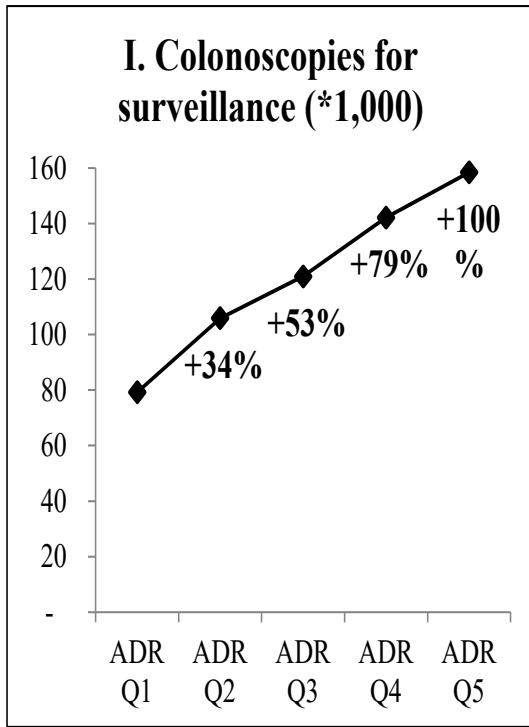


- **30 minute, free interactive, online**
 - www.kp.org/DARE
- **Improved adenoma detection 25% to 40%**
- **Prompt 3.13% increase average** (95% CI 1.3-4.9)
 - Higher for lower detectors - 5% increase
- **Decreased variation**
- **High value decrease CRC morbidity/cost**
 - Overall >50% fewer post-colo CRC
 - Likely >100 cancer fewer/3 yrs, >\$10 million
- **ADR increase of $\geq 10\%$ vs. $< 1\%$ was associated with a 55% reduced relative risk of PCCRC (HR: 0.45, 95%CI: 0.24-0.82)**
 - Not associated with starting ADR*

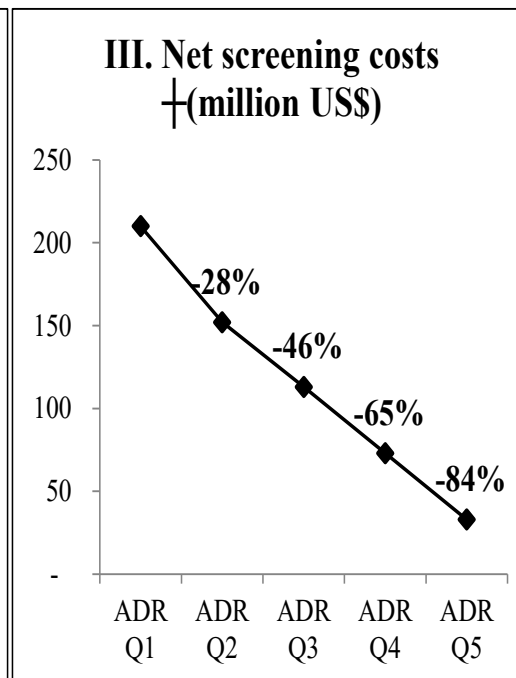
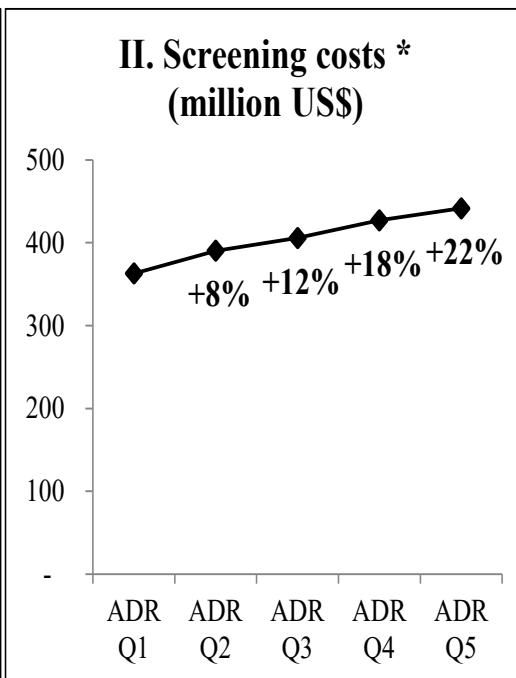
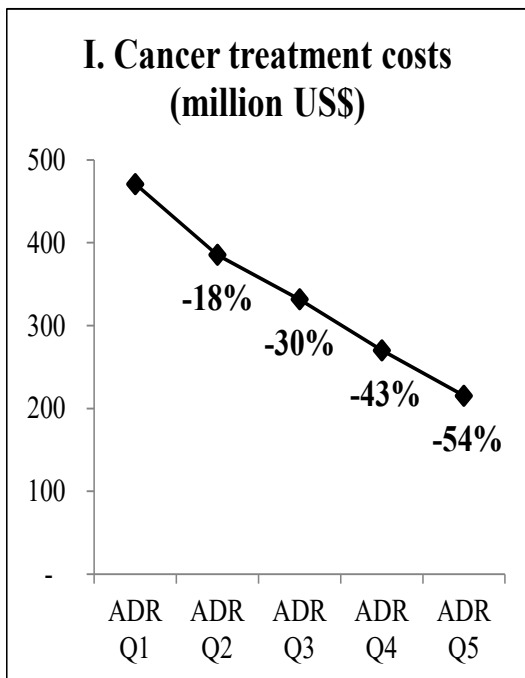
Modeling a lifetime: Higher ADRs/Quality has a big impact



Increasing ADR increases number of exams, but not as many as we might think



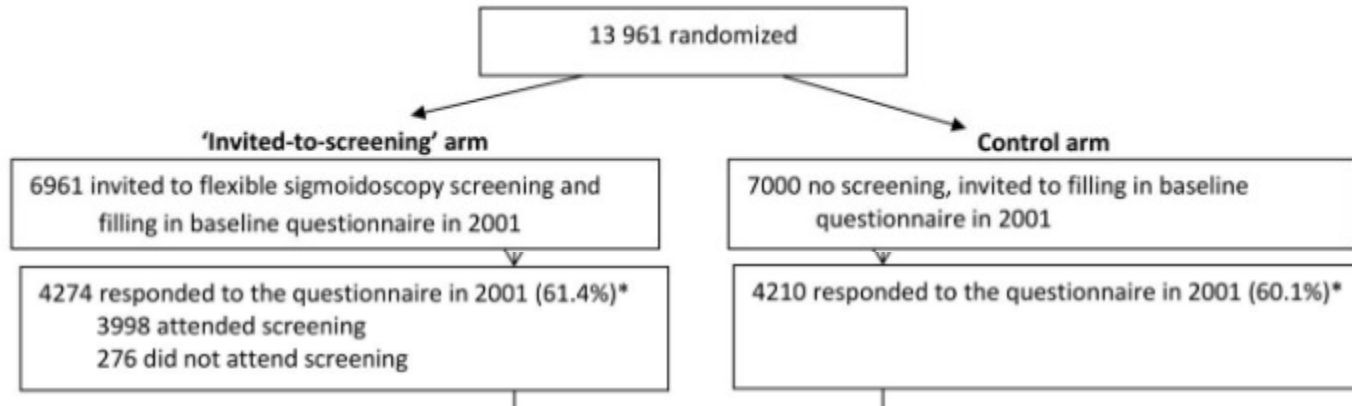
Overall increasing ADR is likely win:win:win for incidence, mortality, cost with minimal effort



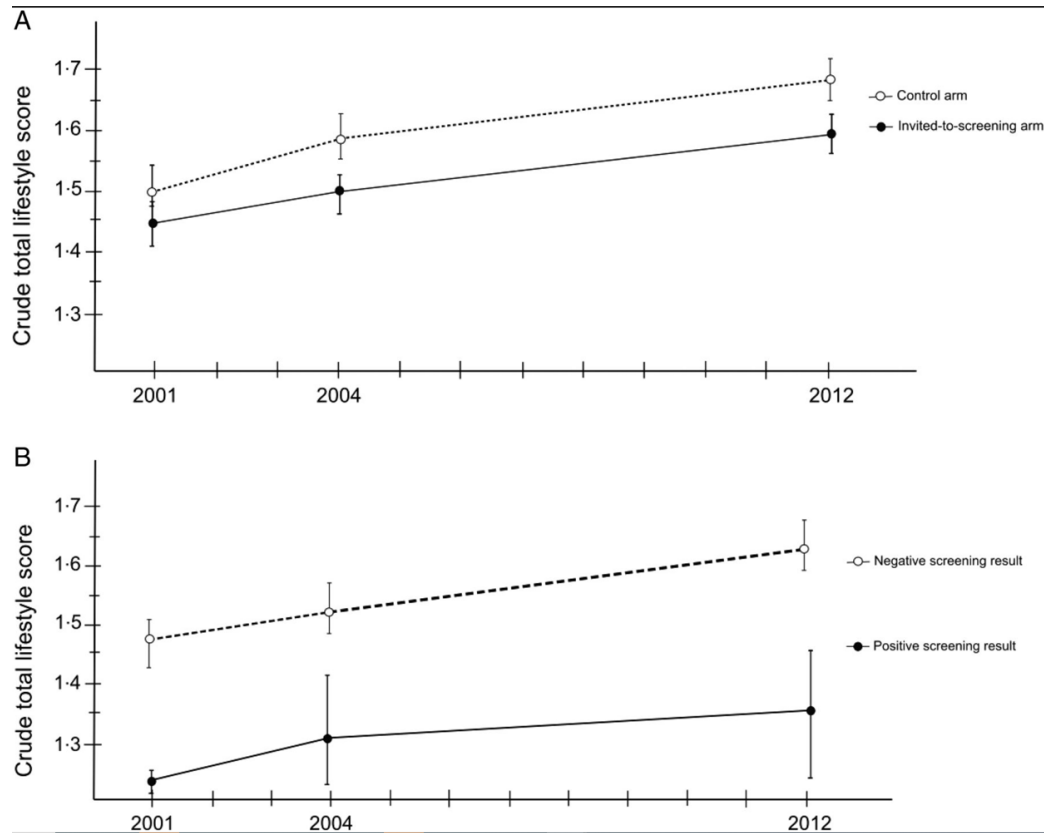
Artificial Intelligence and Colonoscopy Quality: Problem **not** solved

- Beware unexpected consequences

More is better vs. unexpected consequences



Invitation to screening had adverse effect on other behaviors



At 3 years:

- More weight gain
- Less smoking cessation
- Poorer exercise habits
- Lower increase in good diet
- Difference persisted at 11 years

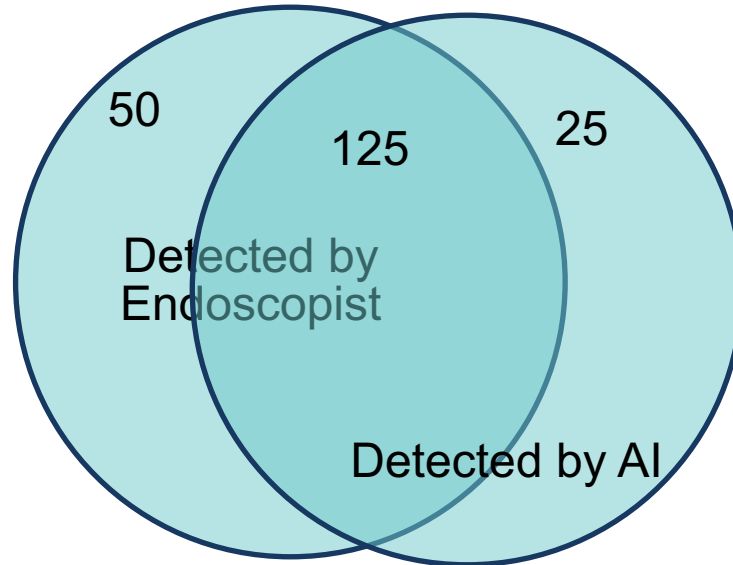
Berstad, Gut, 2015 and
Larsen CGH 2007 and

Does this apply to AI? Imagine 400 people getting a colonoscopy

Adenoma detection has two parts – here an “extra” 25 people have an adenoma detected by AI and an “extra” 50 by endoscopist

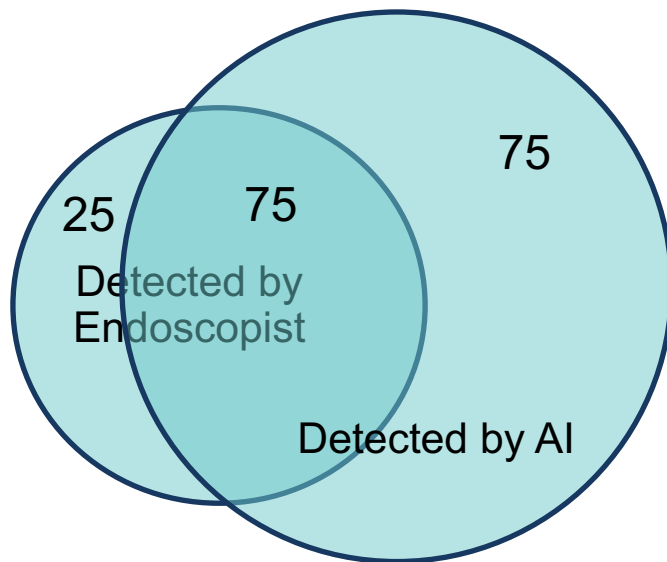
Total is 200/400

ADR is 50%



Does this apply to AI? What if AI made the endoscopist less attentive for their component?

Here an “extra” 75 people have an adenoma detected by AI and an “extra” 25 by endoscopist



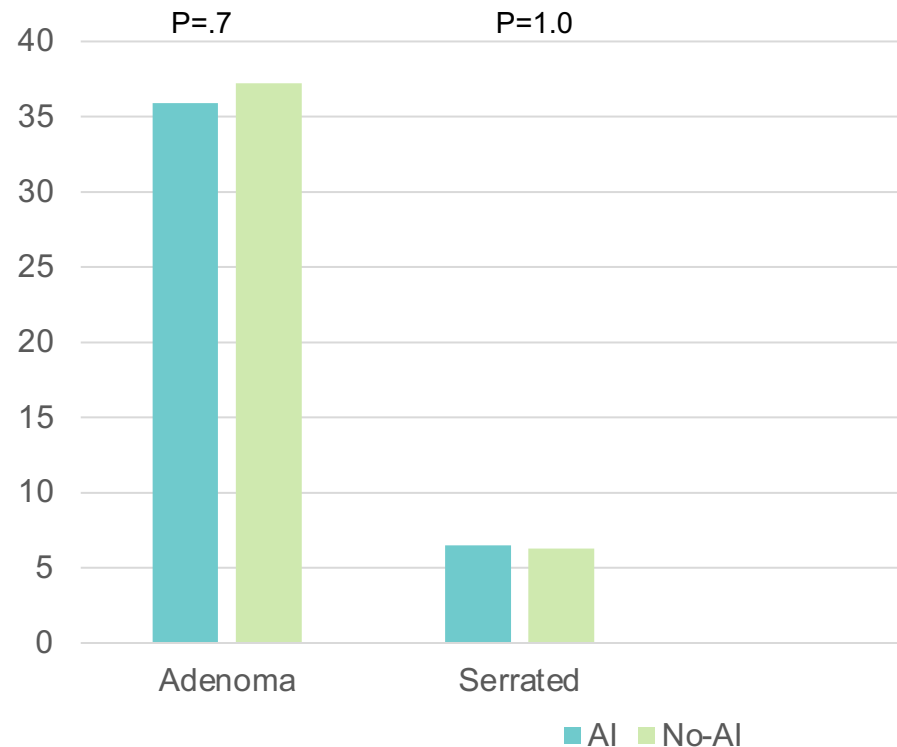
Total is 150/400

ADR is 37.5%

Even lower if visualization techniques deteriorate

In real life use, no clear benefit in large trial

- 769 patients (one of largest)
- 4 Centers
- Pragmatic trial – was or was not used in colonoscopy
- “studies are needed to better understand why some endoscopists derive substantial benefits from CAde and others do not”





As automation gets sharper, pilots' thinking skills are getting duller.

BY STEVE CASNER DEC 12, 2014 • 7:47 AM



Ebbatson in 2010, pilots in simulator

Manually landed 737 using no automation
“a rare request in today’s automation age”

Success strongly and inversely
associated with time in recent flight logs
on “auto-pilot”

Artificial Intelligence and Colonoscopy Quality: Problem *not* solved

- AI increases ADR
 - with expert groups over short follow-up
 - In somewhat artificial settings (e.g. tandem colonoscopy)
- Could it immediately or over time
 - Decrease MD-part of ADR
 - Reliance on AI
 - Impede fellow training in adenoma detection
 - (see: airline pilots and autopilot)
 - ?No net effect or even harm?
- Am waiting for other large studies and over time