

OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING

Saturday, May 30, DDW Chicago, 2009

Presenter: Michael Bretthauer

The effect of colonoscopy screening on colorectal cancer incidence and mortality

Michael Bretthauer MD PhD

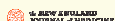
The New England Journal of Medicine, Boston, MA, USA

The Cancer Registry of Norway, Oslo, Norway

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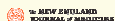
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“How much does colonoscopy screening reduce the death rate?”

- ▶ Virtually no effect on all-cause mortality or survival (no. of live-years saved=0)
- ▶ Colonoscopy does not “save lives”
 - Lifetime risk of CRC: up to 5-6%
 - Case fatality: 50% (=2.5-3% lifetime risk of CRC mortality)
 - Screening effect (?): 50% (=1.25-1.5%)
- ▶ “Saves lives” may not be a good statement to use in colonoscopy awareness campaigns

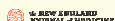
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Strengths of evidence

- ▶ Case-control studies:
 - Cases (CRC, individuals with colonoscopy...)
 - No ITT
 - No population effect estimate
 - Need to be confirmed in RCT's (PSA screening)
- ▶ Randomised trials
 - Gold standard, required before recommendation
 - No selection bias (ITT)
 - Self-selection bias
 - Underestimation due to non-compliance

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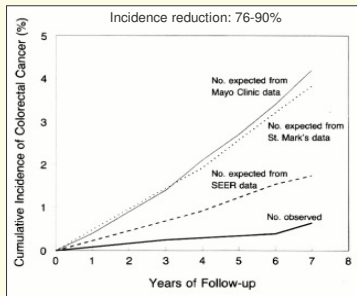


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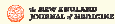
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Evidence for CRC incidence and mortality – case control studies

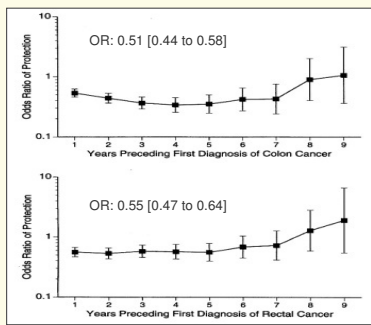


Winawer S et al. N Engl J Med 1993;329:1977-1981

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Evidence for CRC incidence and mortality – case control studies



Muller, AD et al. Ann Intern Med 1995;123:904-910

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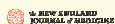
Evidence for CRC incidence and mortality – case control studies

Baxter et al. Ann Intern Med 2008

Table 3. Results of Primary Analysis: Odds Ratio for the Association Between Colonoscopy and Colorectal Cancer Death*

Model	Odds Ratio (95% CI)			
	All Cancer	Right-Sided Cancer	Left-Sided Cancer	Undefined Site of Cancer
Attempted colonoscopy				
None	1.00	1.00	1.00	1.00
Any	0.69 (0.63-0.74)	1.07 (0.94-1.21)	0.39 (0.34-0.46)	0.90 (0.75-1.08)
Completeness of colonoscopy				
None	1.00	1.00	1.00	1.00
Complete	0.63 (0.57-0.69)	0.99 (0.86-1.14)	0.33 (0.28-0.38)	0.80 (0.73-1.10)
Incomplete	0.91 (0.78-1.07)	1.25 (1.07-1.45)	0.63 (0.49-0.81)	0.91 (0.61-1.35)

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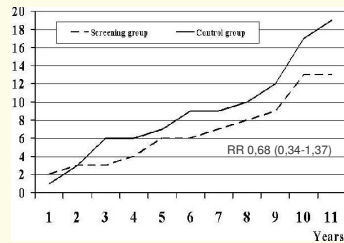
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Evidence for CRC incidence and mortality – randomized trial

DDW 2009: T2046.
This-Evensen E, Hoff G: Once-Only Colonoscopy Screening for Prevention of Colorectal Cancer-11 Years of Follow-Up



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Guidelines

Levin et al, Gastroenterology, 2008: Screening and Surveillance for the Early Detection of Colorectal Cancer and Adenomatous Polyps: A Joint Guideline From the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology

"In a randomized controlled trial of ESIG versus no screening and with follow-up CSPY and polypectomy performed for any polyp detected at sigmoidoscopy, the screening group experienced an 80% incidence reduction in CRC."

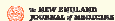
"In a case-control study of CSPY in the US VA population, CSPY in symptomatic patients was associated with a 50% reduction in mortality"

"In the National Polyp Study, the incidence of CRC after clearing CSPY was reduced by 76% to 90% compared with 3 nonconcurrent reference populations. In an Italian adenoma cohort study, there was an 80% reduction in CRC incidence compared with expected incidence in a reference population. However, not all studies have shown the same level of protection. Combined data from 3 US chemoprevention trials showed incidence rates of CRC after clearing CSPY approximately 4 times that seen in the National Polyp Study, with no reduction in CRC incidence compared with data from SEER database and 2 US dietary intervention trials also showed higher rates of incident CRC after clearing CSPY than were observed in the National Polyp Study"

Conclusion: "Overall, the data support the conclusion that CSPY with clearing of neoplasms by polypectomy has a significant impact on CRC incidence and thus, by extension, mortality. The magnitude of the protective impact is uncertain."

This-Evensen E, et al. Scand J Gastroenterol 1999;34:14-20
Witwer SJ, et al. N Engl J Med 1993;329:1977-81
Cianfro F, et al. Gut 2001;48:812-5
Robertson DJ, et al. Gastroenterology 2005;129:24-41
Albers DS, et al. N Engl J Med 2000;342:1156-62
Schatzkin A, et al. N Engl J Med 2000;342:1149-55.

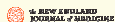
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Evidence summarized

- ▶ Case-control studies show effect of 50-90% for CRC incidence, mortality
- ▶ 1 small RCT: 32% incidence reduction ITT (64%-37% excess risk)
- ▶ No large-scale RCT's

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Conclusions (1)

- ▶ CRC screening does not “save life”
- ▶ An effect of colonoscopy screening on CRC incidence and mortality is likely
- ▶ The magnitude of the effect is unknown, may not be as large as communicated to the public (<50%)
- ▶ A large-scale RCT is needed to definitively address this issue

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Conclusions (2)

In the meantime...

- ▶ “A healthy individual deserves fully informed consent, with information provided at the individual and population level” (Editorial, The Lancet, April 11, 2009)
- ▶ critical appraisal of pro’s and con’s towards the public is advocated
- ▶ Inform about the strength of the evidence, use absolute numbers, inform about harms of the screening methods of choice
- ▶ Informed consent (similar to research participation)

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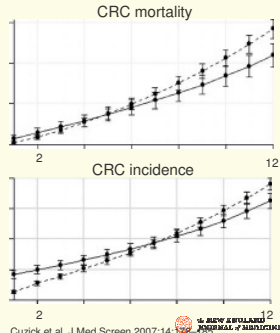
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CRC incidence and mortality

- Two effects of colonoscopy screening; different time frames



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Cuzick et al. J Med Screen 2007;14:199-203
