CRC (Colorectal Cancer) Screening and Surveillance

Shiraaz Gabriel

SSA
GASTROENTEROLOGY FOUNDATION OF SUB-SAHARAN AFRICA
ESTABLISHED 2006

Stellenbosch UNIVERSITY
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forward together
sonke siya phambili
saam vorentoe

Division of Gastroenterology
Department of Medicine
Tygerberg Hospital

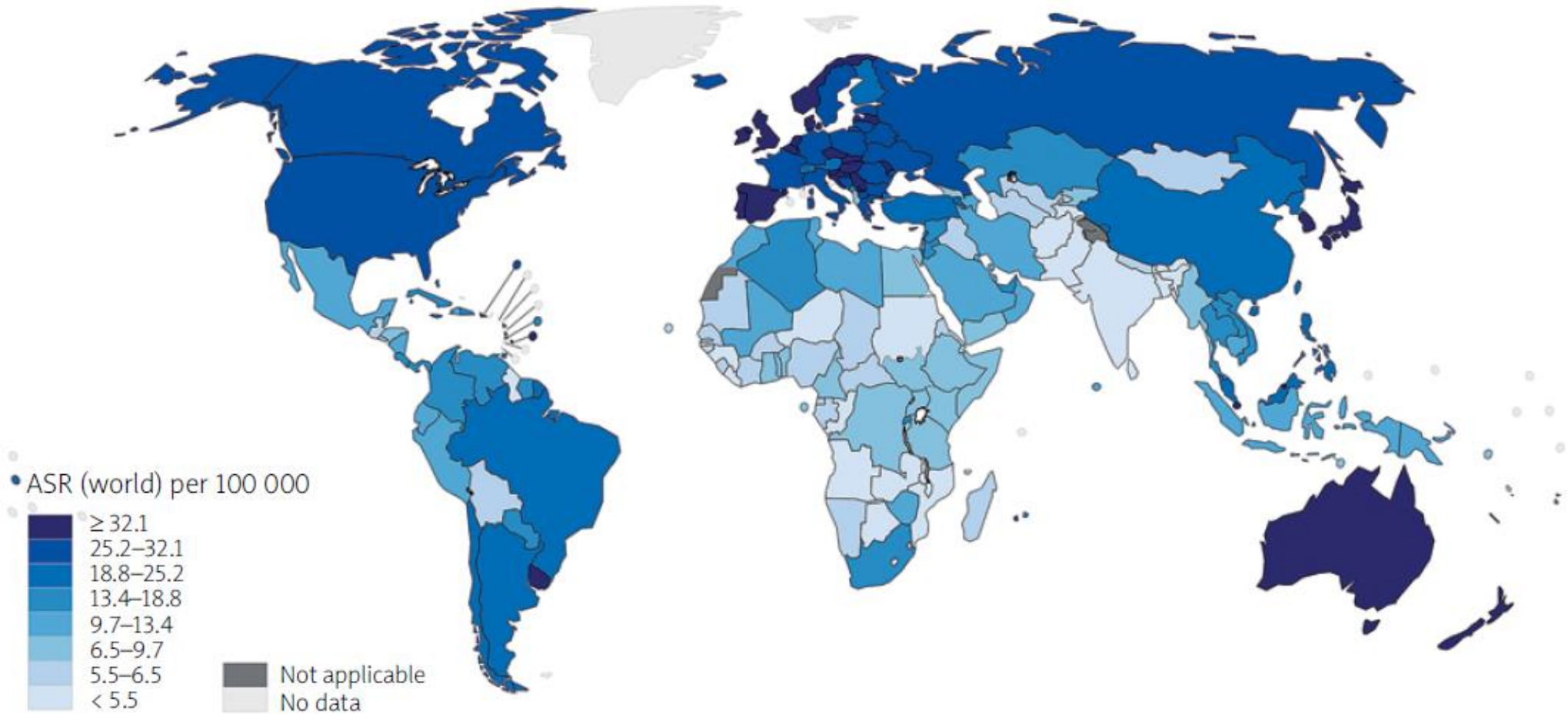

Figure 1. Map showing estimated age-standardised incidence rates (world) in 2018, colorectum, both sexes, all ages (reproduced from http://globocan.iarc.fr/ [10])

Rawla Gastro Rev 2019:14(2):89-103

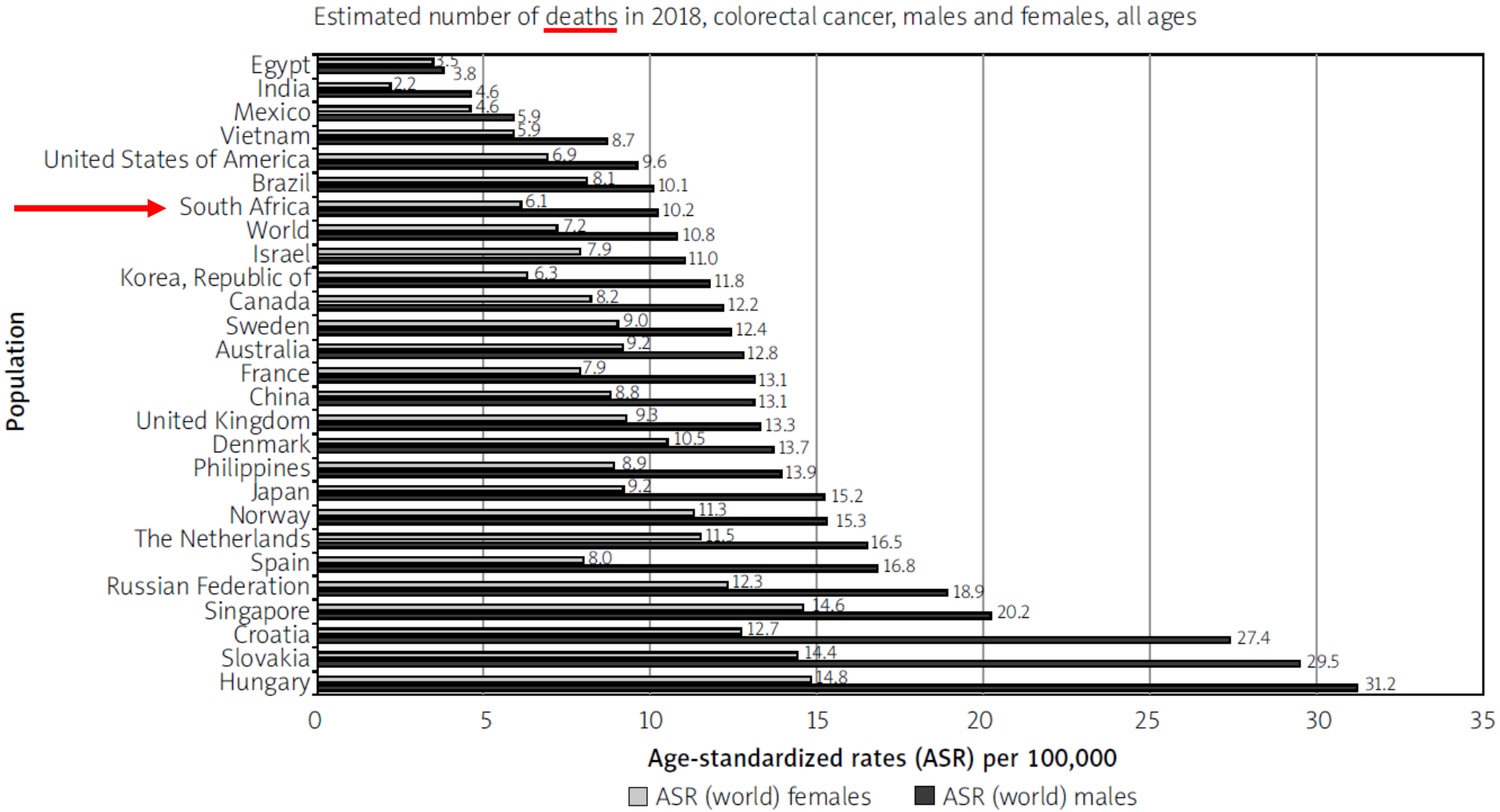

Figure 5. Bar chart showing country specific age-standardised (world) mortality rates, colorectal cancer, by sex in 2018 (source http://globocan.iarc.fr/ [10])

The Cancer Association of South Africa

2 April 2021 – CANSA in partnership with The South African Colorectal Society (SACRS) launches its Colorectal Awareness and Support Programme on World Health Day, 7 April 2021. COVID-19 has led to a delay in screenings and treatment as CANSA urges all to make health a priority.

#LowerCancerRisk #ColorectalCancer #ActiveBalancedLifestyle #CANSAscreening #CANSAcares

CANSA and the SACRS will also advocate with policy makers for a National Colorectal Cancer Policy. The policy should promote the rights of colorectal cancer patients, guide population based screening and public health services related to risk reduction, treatment, care, support and control of colorectal cancer.

Dr Adam Boutall, head of colorectal surgery at Groote Schuur Hospital and the President of the SACRS, "The SACRS is looking forward to partnering with CANSA as it launches its colorectal campaign. Early diagnosis of colorectal cancer, improves survival and increasing awareness and education around colorectal cancer is critical to achieving this."

CANSA April 2022

Screening

It's important to be aware of a family history of colorectal cancer and to take advantage of screening, before symptoms are experienced, and not to wait until experiencing discomfort, as there are no symptoms at the onset of this cancer. Early detection is particularly important.

A colonoscopy, performed by a Gastroenterologist, in symptomatic patients or patients over the age of 50 can detect precancerous polyps in the colon. If these polyps are removed, the chance of developing colorectal cancer can be dramatically reduced. If abnormal symptoms are experienced, or if there is a family history of colorectal cancer, a colonoscopy may be requested at a younger age.

Identifying the presence of blood in the stool, can help detect colorectal cancer early. Faecal Occult at home stool tests (R100), which can be done at home, are available at certain CANSA Care Centres – email info@cansa.org.za for details. If the test is positive (visible red line on test strip) for the presence of blood in the stool, CANSA will provide a referral letter to request a colonoscopy.

Colorectal Cancer

Top 3 in men and women

If diagnosed early it can increase your chances of survival. KNOW THE RISKS

EARLY DETECTION IS KEY

Most colorectal cancers begin as a **POLYP**, a small growth of tissue that starts in the lining and grows into a centre of the colon or rectum. Doctors can remove polyps during the colonoscopy procedure.

LIFESTYLE FACTORS

- Lack of regular exercise
- Low fruit/ vegetable intake
- Low-fibre & high-fat diet
- Being overweight (obesity)
- Alcohol abuse
- Poor oral/ dental hygiene
- Tobacco use

GENETIC FACTORS

- Hereditary Syndromes such as Lynch Syndrome
- Personal or family history of colorectal cancer or polyps

OTHER FACTORS

- Old age
- Type 2 Diabetes
- Inflammatory Bowel Disease

SIGNS & SYMPTOMS (many people experience no symptoms)

- Change in bowel habits, including diarrhoea and constipation or both
- Rectal bleeding or blood in stools
- Persistent abdominal discomfort (cramps, gas or pain)
- A feeling that the bowel doesn't empty completely
- Weakness or fatigue
- Unexplained weight loss

For more information on colorectal cancer contact your local health facility

CANSA Toll Free
0800 22 66 22
www.cansa.org.za

072 197 9305
071 867 3530

health
Department:
Health
REPUBLIC OF SOUTH AFRICA

CANSA
Cancer Association of South Africa
Research • Educate • Support

2030 NDP

IS YOUR COLON HEALTHY?

Watch video at
https://youtu.be/zq8xHbvFR4E

- CANSA promotes living an active balanced lifestyle and promotes that certain lifestyle changes can lower the risk of cancer
- Colorectal cancer is the **second** most common cancer in **men** (following prostate cancer) and the **third** most common in **women** (following breast and cervical cancer)
- 1 in **77** males and 1 in **132** females diagnosed according to National Cancer Register (2019)
- There is evidence of many more younger individuals being diagnosed with colorectal cancer
- In partnership with Medtronic, CANSA released a colorectal awareness VIDEO featuring 'Sizwe and Crystal' – WATCH: https://youtu.be/zq8xHbvFR4E

National Cancer Registry 2019

Incidence of Colorectal Cancer in South Africa

According to the outdated National Cancer Registry, known for under reporting, the following cases of colorectal cancer were histologically diagnosed during 2019:

Group - Males 2019	Actual No of Cases	Estimated Lifetime Risk	Percentage of All Cancers
All males	2 342	1:77	5,63%
Asian males	146	1:51	13,94%
Black males	752	1:164	5,05%
Coloured males	326	1:59	6,59%
White males	1 118	1:34	5,20%

Group - Females 2019	Actual No of Cases	Estimated Lifetime Risk	Percentage of All Cancers
All females	1 954	1:132	4,46%
Asian females	146	1:51	13,94%
Black females	684	1:273	3,38%
Coloured females	291	1:89	5,86%
White females	871	1:49	4,90%

Screening for Colorectal Cancer

- Test performed on patients who have
  - NO symptoms and
  - NO personal history of colon polyps or colon cancer

Table 1. Effects of Screening on Colorectal Cancer Incidence and Mortality

Screening test	Evidence sources	Reduction in CRC incidence, %	Reduction in CRC mortality, %	Reduction in overall mortality, %
Stool-based tests				
gFOBT[7–12]	Randomized controlled trials	17–20	9–22	No benefit demonstrated
FIT[17–19]	Observational studies, test characteristic studies	10	22–62	Unknown
FIT-DNA (mt-sDNA test)	Test characteristic studies, compared to fit and colonoscopy	Unknown	Unknown	Unknown
Direct visualization tests				
Flexible sigmoidoscopy[24–27,74]	Randomized controlled trials	Intent to treat: 27 (17–23) Per protocol: 31–33	Intent to treat: 21 (22–31) Per protocol: 38–43	2–4 in individual studies; 2.5 in meta-analysis
Colonoscopy[32–42]	Observational studies	Cohort: 40–69 Case–control: 31–91	Cohort: 29–88 Case–control: 60–70	Unknown
CTC	Test characteristic studies	Unknown	Unknown	Unknown

Ladabaum Gastroenterology 2020;158:418-432

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Table 2. Summary of performance characteristics for CRC screening tests

	Performance characteristics	Pros	Cons
Stool- and blood-based tests			
FIT[a]	79% sensitivity and 94% specificity for CRC	Noninvasive No risk of complications Can be done at home Programmatic screening possible	Positive results require colonoscopy Needs to be repeated annually Low sensitivity for advanced adenomas Does not detect serrated lesions
mtsDNA stool test	92% sensitivity and 87% specificity for CRC Long-term reduction in CRC incidence and mortality is unknown	Noninvasive No risk of complications Can be done at home Better sensitivity for advanced adenomas and large serrated lesions than FIT alone	Positive results require colonoscopy Repeat interval unknown but 3 years proposed More expensive than FIT alone Concern for overtesting and harms from a positive test and negative colonoscopy

Shaukat Am J Gastroentrol 2021;116:458-479

Direct visualization tests			
Colonoscopy	100% detection rate for CRC. Reported incidence of PCCRC 3%–9% Long-term reduction in CRC incidence 31%–71% and CRC mortality 65%–88% from observational studies	Diagnostic and therapeutic Can detect cancers and precursor polyps Infrequent repeat interval (q10 years) possible	Operator dependent Requires bowel preparation and sedation Risk of complications 4–8 in 10,000
Flexible sigmoidoscopy	90%–100% sensitivity for distal colon CRC Long-term reduction in CRC incidence 21%; reduction in CRC mortality 26%	Less invasive than colonoscopy Low risk of complications	Positive results require colonoscopy Needs to be repeated every 5–10 years Requires enema preparation
CT colonography	90%–100% for CRC Variable sensitivity for polyps, poor sensitivity for flat lesions and sessile serrated lesions	Less invasive than colonoscopy Does not require sedation Lower risk of complications than colonoscopy	Positive results require colonoscopy Requires bowel preparation Followup may be required for extracolonic findings Limited availability of trained radiologists across the United States
colon capsule	81% sensitivity and 93% specificity for polyps ≥6 mm	Minimally invasive Does not require sedation Newer generation tests can be done at home	Requires bowel preparation Positive examinations require colonoscopy Repeat interval unknown

Shaukat Am J Gastroentrol 2021;116:458-479

Screening Modalities

- In some instances the “best”screening test
  - can be considered the one that is acceptable to the patient and gets completed.

Shaukat Am J Gastroentrol 2021;116:458-479

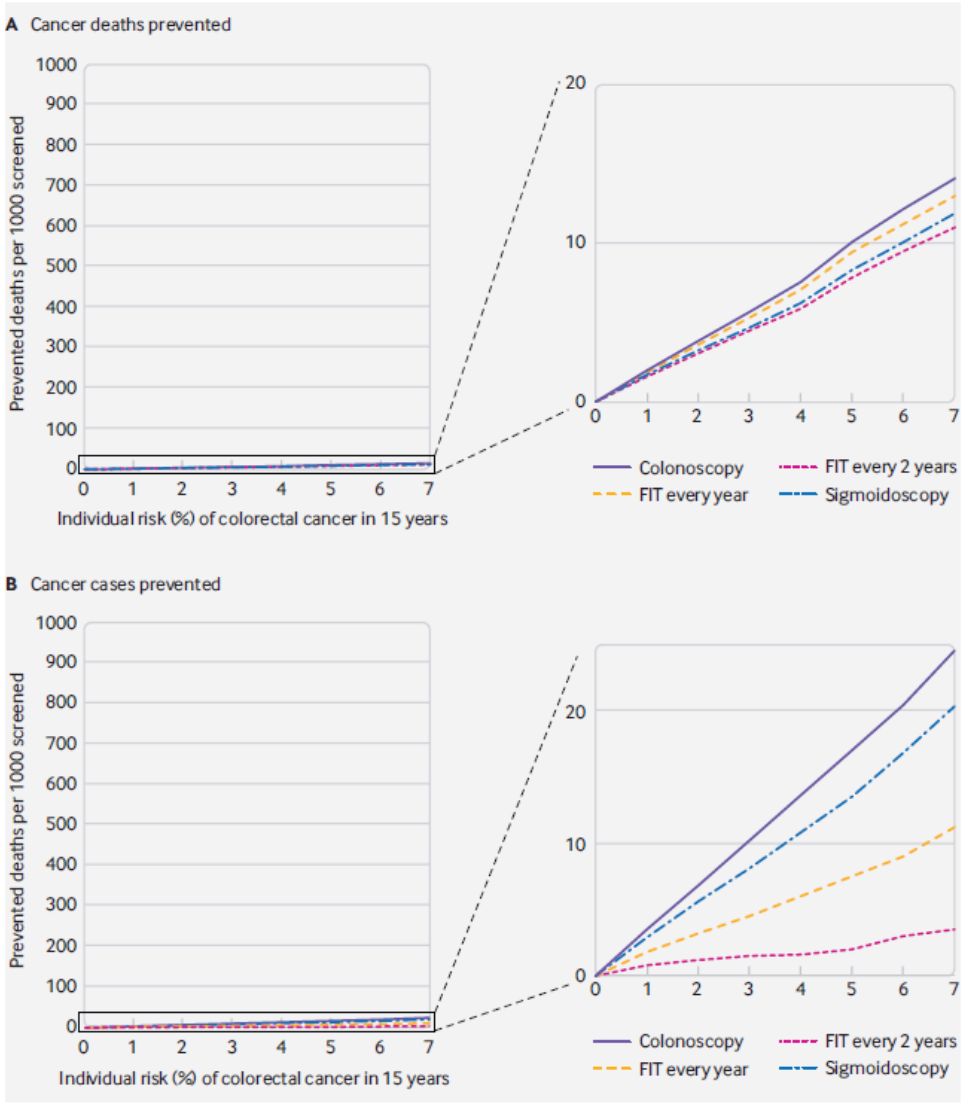
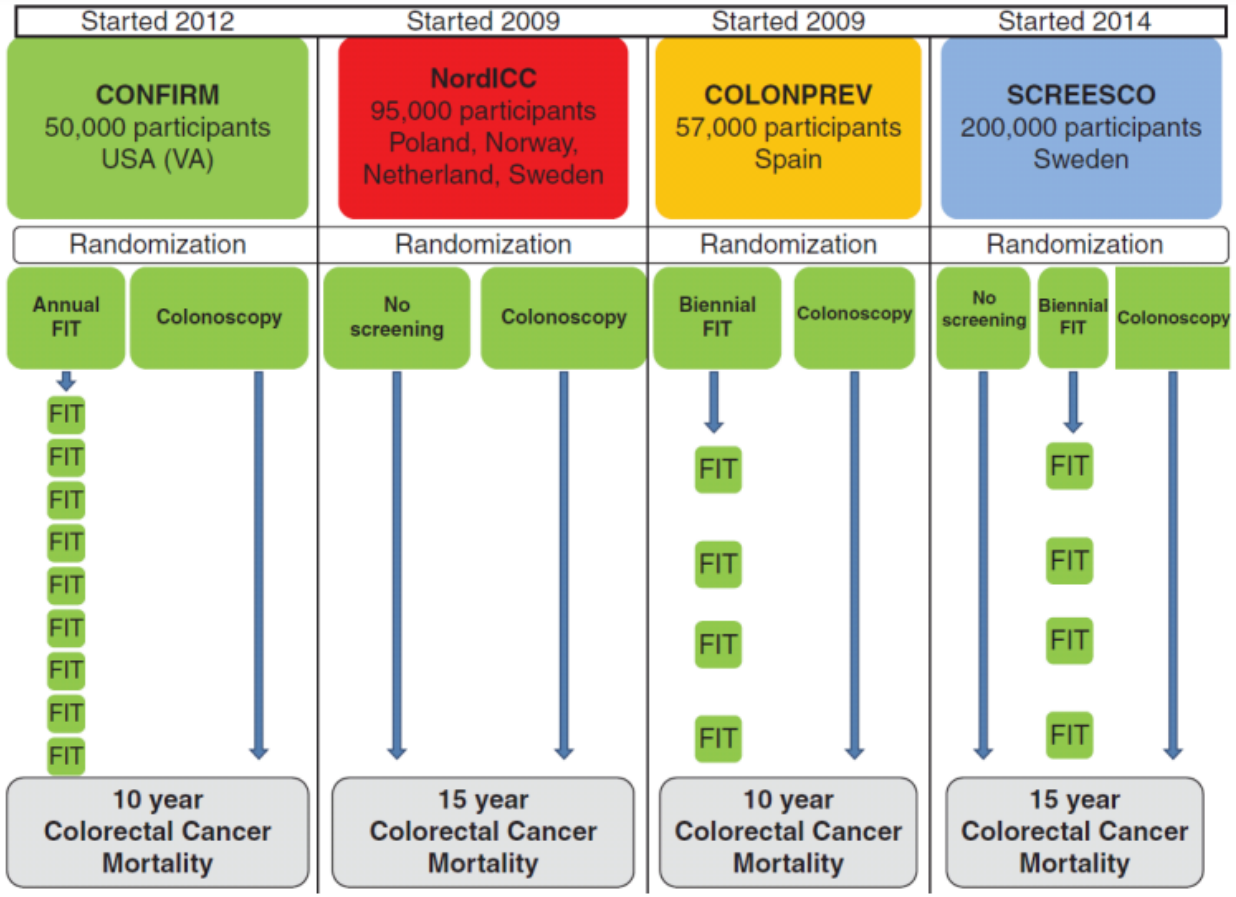


Fig 1 | Number of colorectal cancer (a) deaths and (b) cases prevented by different screening options per 1000 screened individuals, stratified by individuals' 15-year risk of colorectal cancer.

Helsingen BMJ 2019;367:l5515

Ongoing RCT's of Colonoscopy



Gut 2015;64:982-990

New study examines the effectiveness of colonoscopies

By Brenda Goodman, CNN

Updated 3:57 PM EDT, Mon October 10, 2022

(CNN) — Colonoscopies are a dreaded rite of passage for many middle-age adults. The promise has been that if you endure the awkwardness and invasiveness of having a camera travel the length of your large intestine once every decade after age 45, you have the best chance of catching – and perhaps preventing – colorectal cancer. It's the second most common cause of cancer death in the United States. Some 15 million colonoscopies are performed in the US each year.

Now, a landmark study suggests the benefits of colonoscopies for cancer screening may be overestimated.

Is A Colonoscopy Still Effective? Thoughts On The NEJM Article

Is A Colonoscopy Still Effective? My thoughts on the recent NEJM article

This morning, a patient asked me about the recent NEJM Group study because she was hesitant to undergo colorectal cancer screening. Her husband sent her the article causing her to wonder whether the study concluded that a colonoscopy was ineffective.

I told her that the study had the GI community in an uproar, but not because it proved colonoscopies ineffective, but because of its misguided framings concerning its research. The recent New England Journal of Medicine RCT, randomized 85,000 individuals to receive an invitation for a colonoscopy or no screening. Many news outlets have manipulated the results for clickbait, purporting that the study showed no reduction in cancer death and only an 18% reduction in colorectal cancer for patients who were randomized to get screened (colonoscopy).

Sameer Berry, MD, MBA
Gastroenterologist

The NordICC Trial: The Devil Is in the Details

By Rishi Surana, MD, PhD, and Kimmie Ng, MD, MPH

Posted: 11/2/2022 12:05:00 PM
Last Updated: 11/2/2022 2:53:19 PM

EDITORIAL | VOLUME 7, ISSUE 12, P1061, DECEMBER 2022

Controversy over colonoscopy for colorectal cancer screening

The Lancet Gastroenterology & Hepatology

Published: October 25, 2022 • DOI: https://doi.org/10.1016/S2468-1253(22)00356-9 •

These headline findings sparked considerable debate. One CNN news piece described the results as a "meager benefit" and "disappointing", while #GITwitter was awash with heated discussion. The 18% reduction in the risk of colorectal cancer and the lack of a significant benefit in colorectal cancer-related mortality compare unfavourably with results of cohort studies of colonoscopy for colorectal cancer screening, which show reductions in the risk of incident colorectal cancers of 40–69% and of colorectal cancer-related death of 29–88%. But such comparisons are fraught with problems—eg, the unselected population in NordICC is likely to better reflect real-world populations invited to screening, and the findings of randomised trials are substantially less open to the effects of confounding and bias versus cohort studies. Further, several aspects of the trial demand a more nuanced interpretation.

One such aspect is that, of those invited to colonoscopy, only 42% underwent screening. In adjusted per-protocol analyses to estimate outcomes if all invited participants underwent screening, the risk of incident colorectal cancer at 10 years was reduced by 31% (RR 0·69, 95% CI 0·55–0·83) and for colorectal cancer-related death by 50% (0·50, 0·27–0·77). Thus, if completed, a colonoscopy is effective. The debate surrounding the trial's results has somewhat conflated the intervention being examined—ie, a population-level health policy to invite people for (and provide) screening colonoscopy—with colonoscopy as a patient-level intervention. The relatively low uptake of colonoscopy in NordICC—also noted in early data from the COLONPREV (uptake 24·6% with colonoscopy *vs* 34·2% with faecal immunochemical testing [FIT] every 2 years) and SCREESCO trials (35·1% *vs* 55·5% with two rounds of FIT)—highlights the issue of acceptability of an invasive colonoscopy as an initial screening modality. Preference for initial means of screening can vary—eg, by location, race and ethnicity, or socioeconomic status. Ensuring availability of non-invasive options (eg, FIT), with referral to colonoscopy for those with positive test results, may improve the performance of colorectal cancer screening programmes. Further research into population-specific preferences and methods to improve uptake are essential.

US Multi-Society Task Force Guidelines-2017

- Tier 1:
  - Colonoscopy (q10 years)
  - FIT (yearly)
- Tier 2:
  - CT colonography (q5 years)
  - Stool DNA (q3 years)
  - Flexible sigmoidoscopy (q5 years)
- Tier 3:
  - Colon capsule (q5 years)

- Age 50 for average risk individuals
- Age 45 for African Americans

Rex Gastrointestinal Endoscopy 2017;86:1833

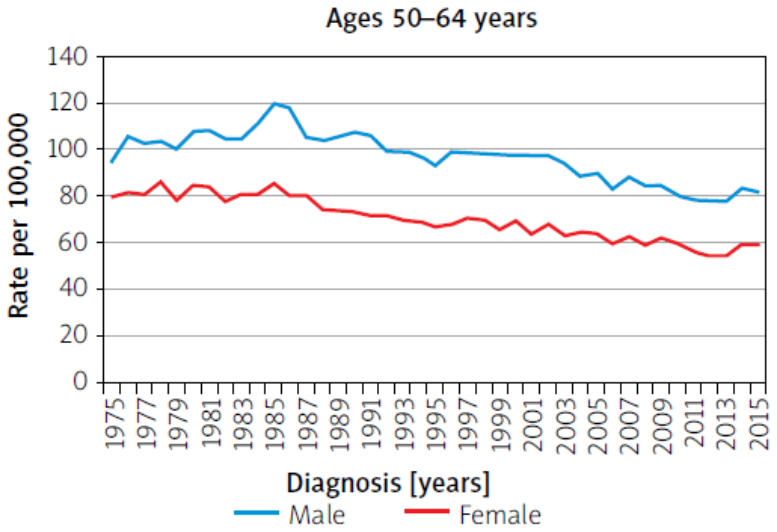
American Cancer Society Guidelines 2018

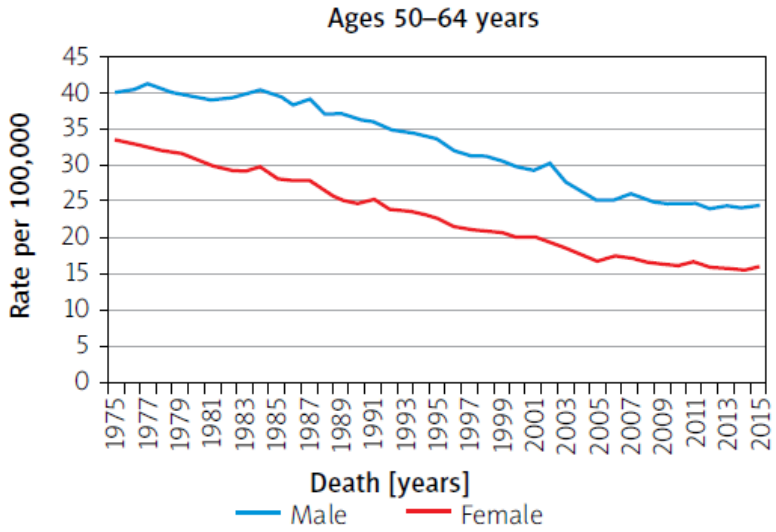
- New age recommendations for average risk
  - Start routine screening for all individuals at age 45
  - Good health with life expectancy of greater than 10 years- screening through the age of 75
  - Individualize CRC screening 76-85 years old
  - Discourage individuals over the age of 85

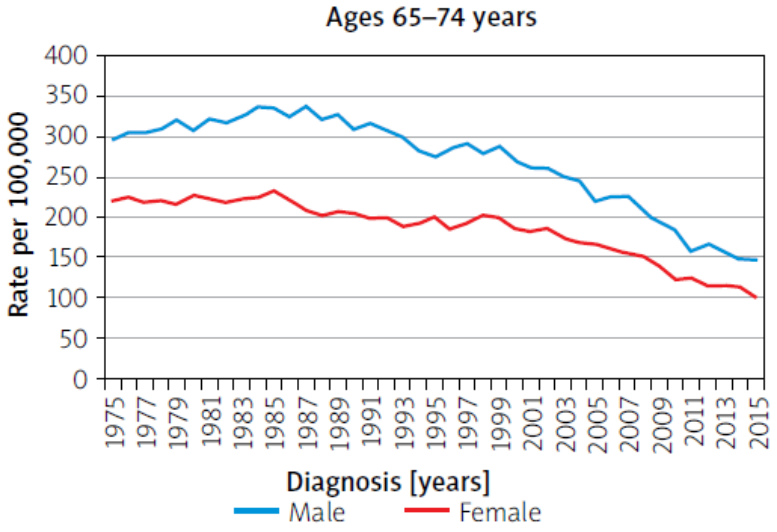
- Recommended screening tests
  - Stool based
    - FIT (yearly)
    - HS FOBT (yearly)
    - Multitarget stool DNA (3 years)
  - Structural examinations
    - Colonoscopy (10 years)
    - CT Colonography (5years)
    - Flexible sigmoidoscopy (5 years)

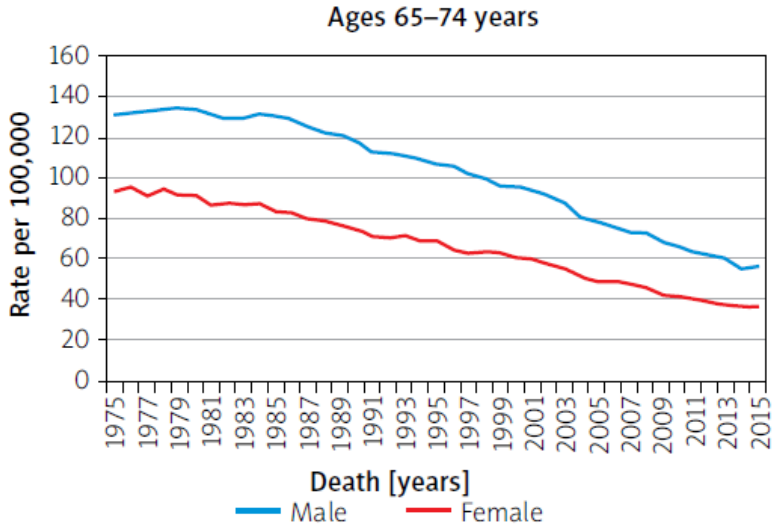
Wolf CA Cancer J Clin 2018;68.4:250-281

SEER data
(Surveillance, Epidemiology and End Results)









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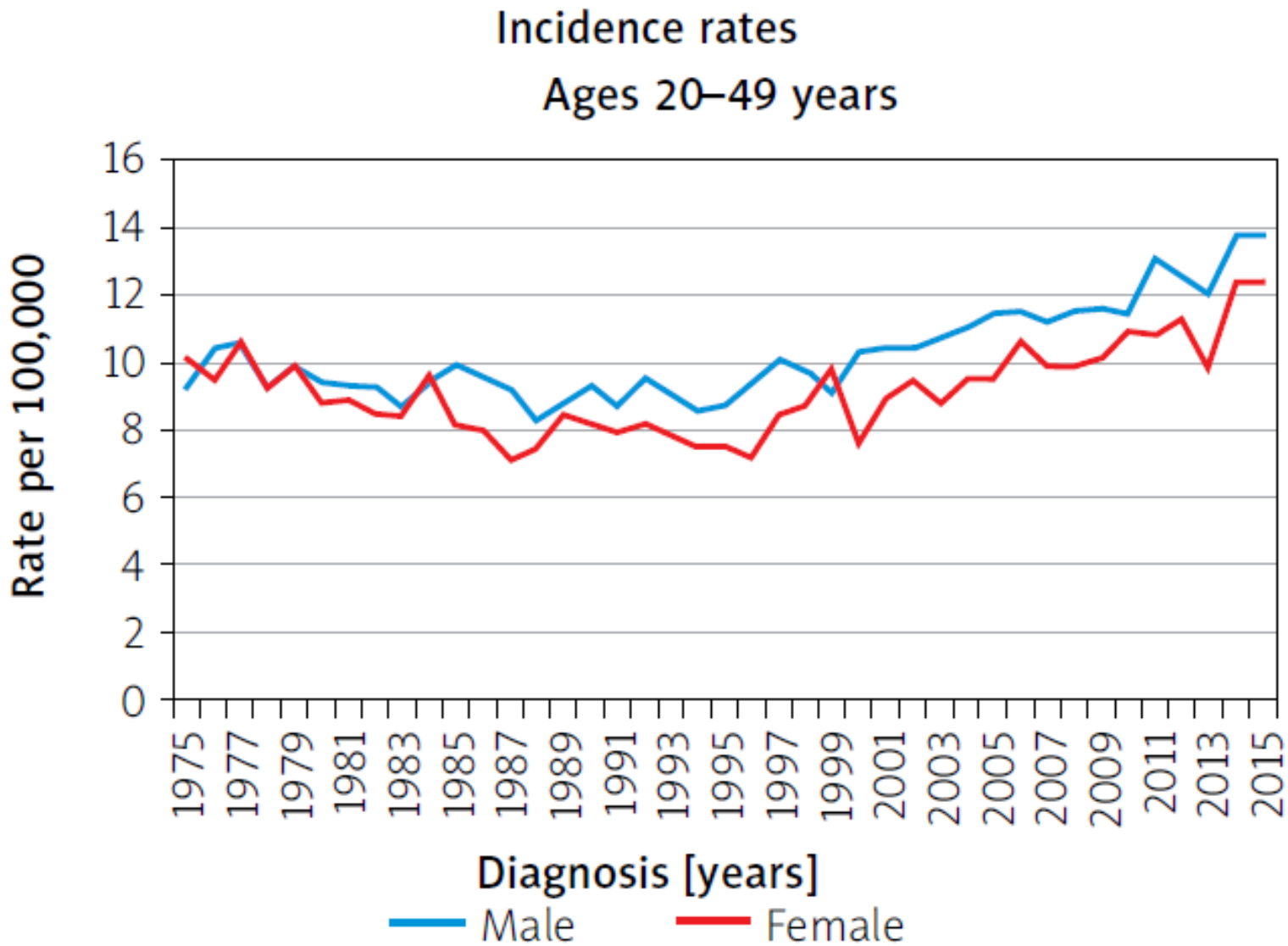

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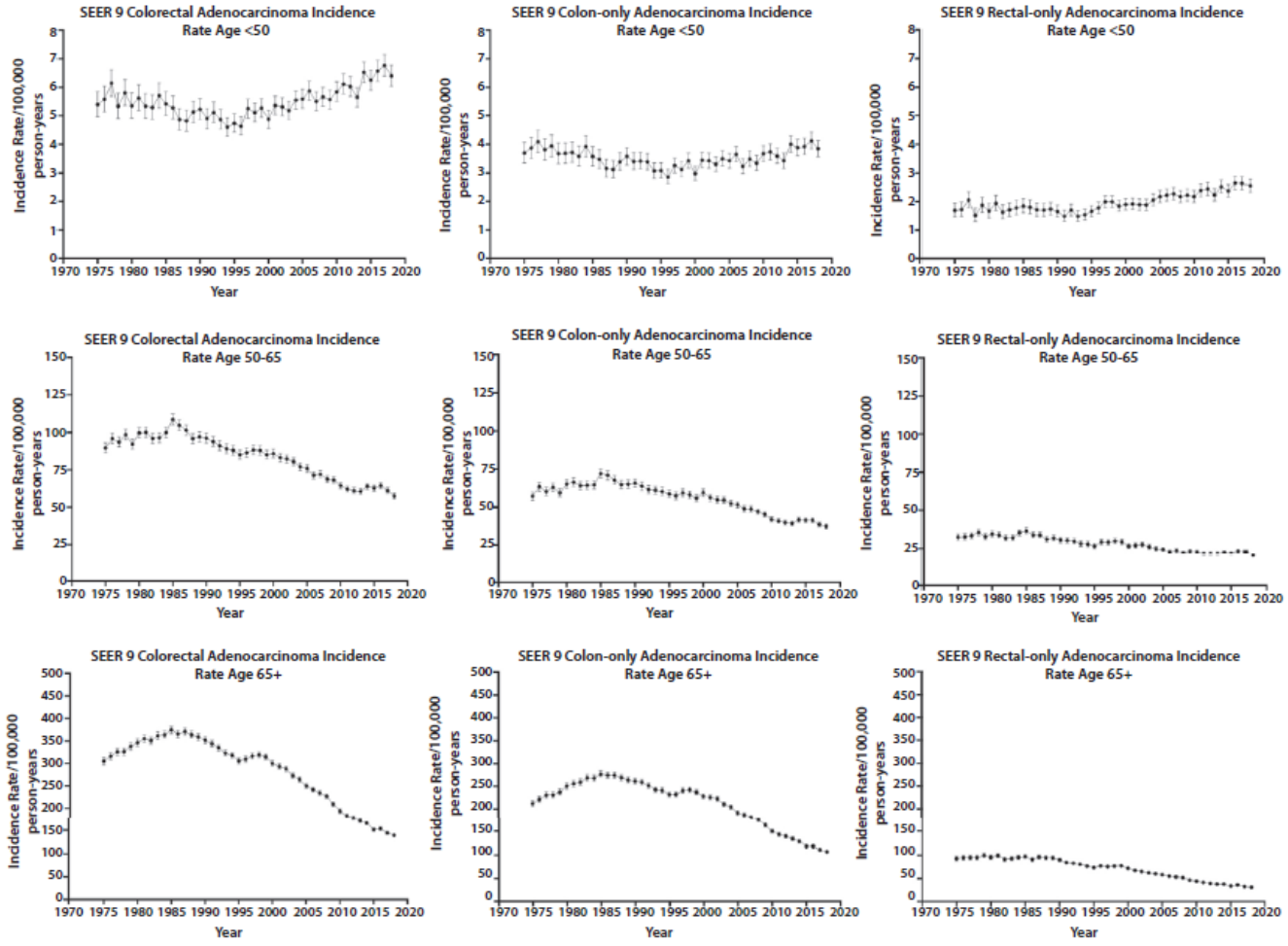
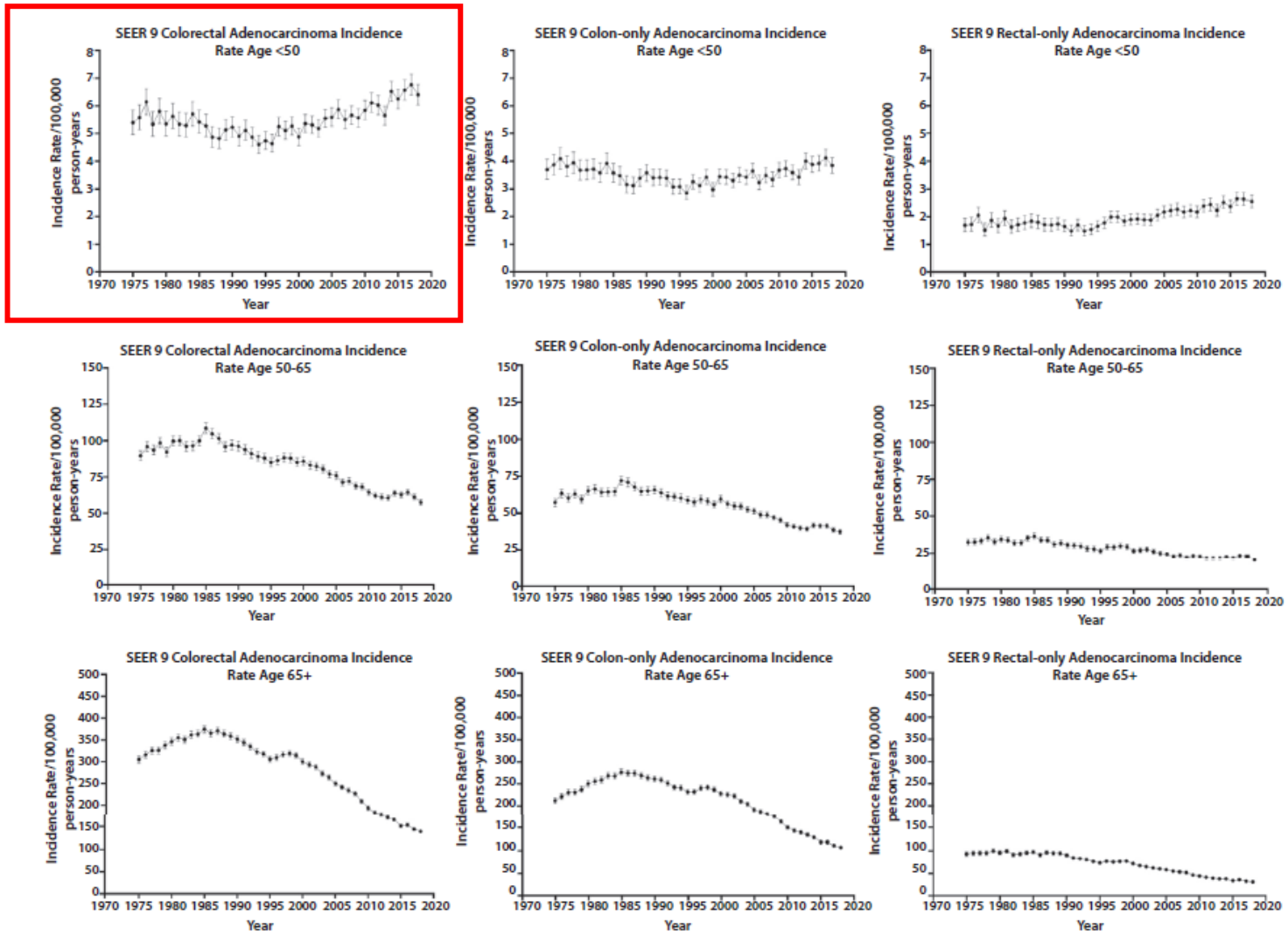


Figure 1. Age-adjusted Surveillance, Epidemiology, and End Results (SEER) incidence rate trends from 1975 to 2018 of colorectal, colon-only site, and rectal-only site adenocarcinoma by age. Incidence rates acquired by E.M., J.K., and M.Z. from SEER 9 Registry (see acknowledgments) using the same methodology as performed in Montminy et al.[15]

Swati Gastroenterology 2022;162:285-299



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Swati Gastroenterology 2022;162:285-299

Report shows ‘troubling’ rise in colorectal cancer among US adults younger than 55

By Jacqueline Howard, CNN

Published 10:02 AM EST, Wed March 1, 2023

(CNN) — Adults across the United States are being diagnosed with colon and rectal cancers at younger ages, and now 1 in 5 new cases are among those in their early 50s or younger, according to the American Cancer Society’s latest colorectal cancer report.

The report says that the proportion of colorectal cancer cases among adults younger than 55 increased from 11% in 1995 to 20% in 2019. There also appears to be an overall shift to more diagnoses of advanced stages of cancer. In 2019, 60% of all new colorectal cases among all ages were advanced.

American Cancer Society Releases New Colorectal Cancer Statistics; Rapid Shifts to More Advanced Disease and Younger People

NEWS PROVIDED BY
American Cancer Society →
Mar 01, 2023, 10:00 ET

- ***Incidence of advanced disease, now 3 in 5 people***
- ***1 in 5 diagnoses in people younger than 55 years old***
- ***Alaska Native people highest incidence and mortality***

CA:
A Cancer Journal for Clinicians

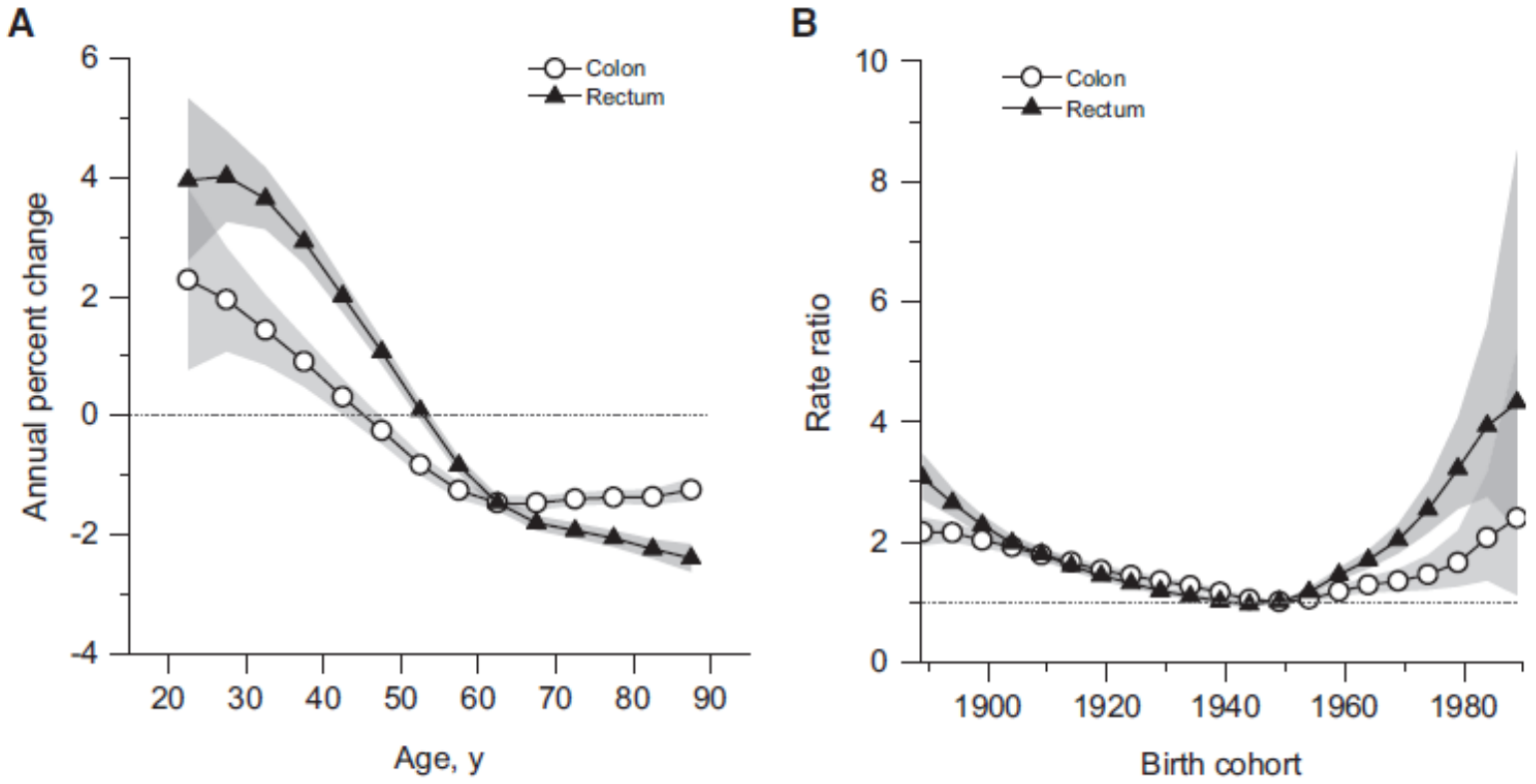
ARTICLE | Open Access

Colorectal cancer statistics, 2023

Rebecca L. Siegel MPH, Nikita Sandeep Wagle MBBS, MHA, PhD, Andrea Cercek MD, Robert A. Smith PhD, Ahmedin Jemal DVM, PhD

First published: 01 March 2023 | https://doi.org/10.3322/caac.21772

Birth Cohort effect



Siegel JNCI 2017;109(8)

American College of Gastroenterology Guidelines 2021

Age

- Start average risk screening at age 45
- Continue screening through age 75
- Screening beyond age 75 should be individualized
- Stop screening at 85

Shaukat Am J Gastroentrol 2021;116:458-479

American College of Gastroenterology Guidelines 2021

Test

- Primary Modalities
  - Colonoscopy (10 years) Or FIT (yearly)

- Other Modalities
  - Flexible sigmoidoscopy (5-10 years)
  - Multitarget stool DNA (3 years)
  - CT Colonography (5 years)
  - Colon Capsule (5 years)

Shaukat Am J Gastroentrol 2021;116:458-479

ACG Guidelines - 2021

Family History

- One first-degree relative <60 years old or two second-degree relative at any age with CRC or advanced adenoma
  - Start screening 10 years before age at dx of youngest relative or at age 40 whatever is earlier
  - Screen by colonoscopy every 5 years

- One first-degree relative > 60 years with CRC or advanced adenoma
  - Start age 40
  - Resume average-risk screening recommendations

- One second-degree relative with CRC or advanced adenoma
  - Follow average risk screening recommendations

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American College of Gastroenterology Guidelines 2021

Endoscopist

- All endoscopist should measure
  - Caecal intubation rate-CIR (at least 95%)
  - Adenoma detection rates ADR (not below 25%)
  - Withdrawal time (at least 6min)

- Colonoscopists with ADR below 25% should undertake remedial training

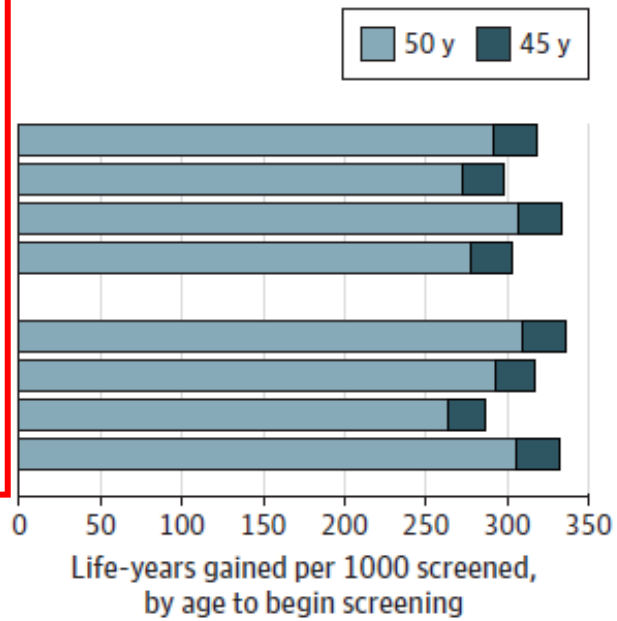
Shaukat Am J Gastroentrol 2021;116:458-479

US Preventative Services Task Force Recommendations Statement

Additional Life years

A Benefit: Estimated life-years gained per 1000 individuals screened[a]

Screening modality and frequency	Mean life-years gained if start screening[b]		Additional life years gained if start screening at age 45 y
	At age 50 y	At age 45 y	
Stool tests			
FIT every year	292	318	26
HSgFOBT every year[c,d]	272	298	26
sDNA-FIT every year	307	333	26
sDNA-FIT every 3 y[d]	278	303	25
Direct visualization tests			
COL every 10 y	310	337	27
CT colonography every 5 y	293	317	24
Flexible SIG every 5 y	264	286	22
Flexible SIG every 10 y plus FIT every year	306	332	26

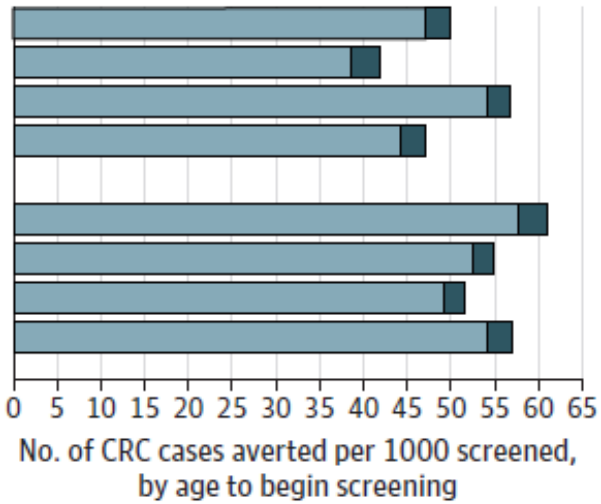


Jama 2021;(19):1965-1977

Benefits of early Screening

B Benefit: Estimated No. of CRC cases averted per 1000 individuals screened[a]

Screening modality and frequency	Mean CRC cases averted if start screening[b]		Additional CRC cases averted if start screening at age 45 y
	At age 50 y	At age 45 y	
Stool tests			
FIT every year	47	50	3
HSgFOBT every year[c,d]	39	42	3
sDNA-FIT every year	54	57	3
sDNA-FIT every 3 y[d]	44	47	3
Direct visualization tests			
COL every 10 y	58	61	3
CT colonography every 5 y	53	55	2
Flexible SIG every 5 y	49	51	2
Flexible SIG every 10 y plus FIT every year	54	57	3

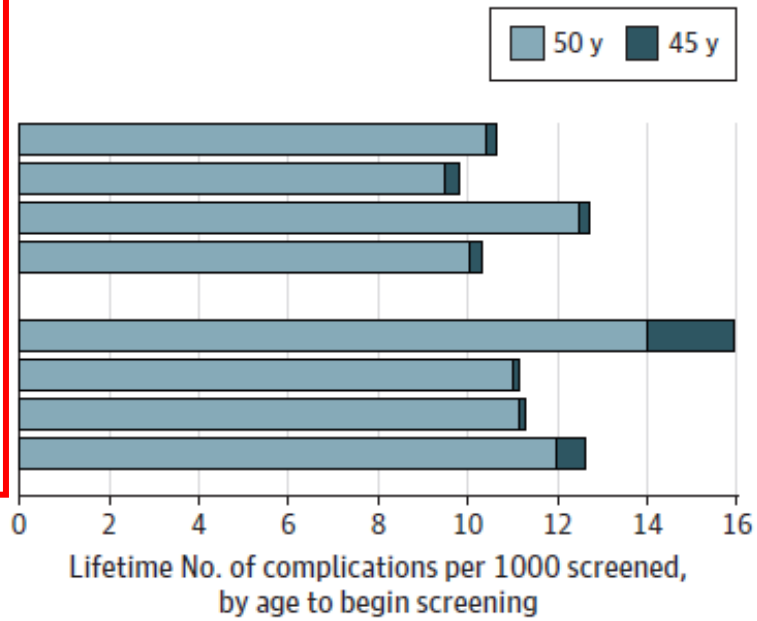


Jama 2021;(19):1965-1977

Harms

A Harms: Estimated lifetime number of complications (gastrointestinal and cardiovascular) of CRC screening and follow-up procedures per 1000 individuals screened[a]

Screening modality and frequency	Mean estimate of complications if start screening[b]		Additional complications if start screening at age 45 y
	At age 50 y	At age 45 y	
Stool tests			
FIT every year	10	11	0.2
HSgFOBT every year[c,d]	9	10	0.3
sDNA-FIT every year	12	13	0.2
sDNA-FIT every 3 y[d]	10	10	0.3
Direct visualization tests			
COL every 10 y	14	16	2
CT colonography every 5 y	11	11	0.2
Flexible SIG every 5 y	11	11	0.1
Flexible SIG every 10 y plus FIT every year	12	13	0.6

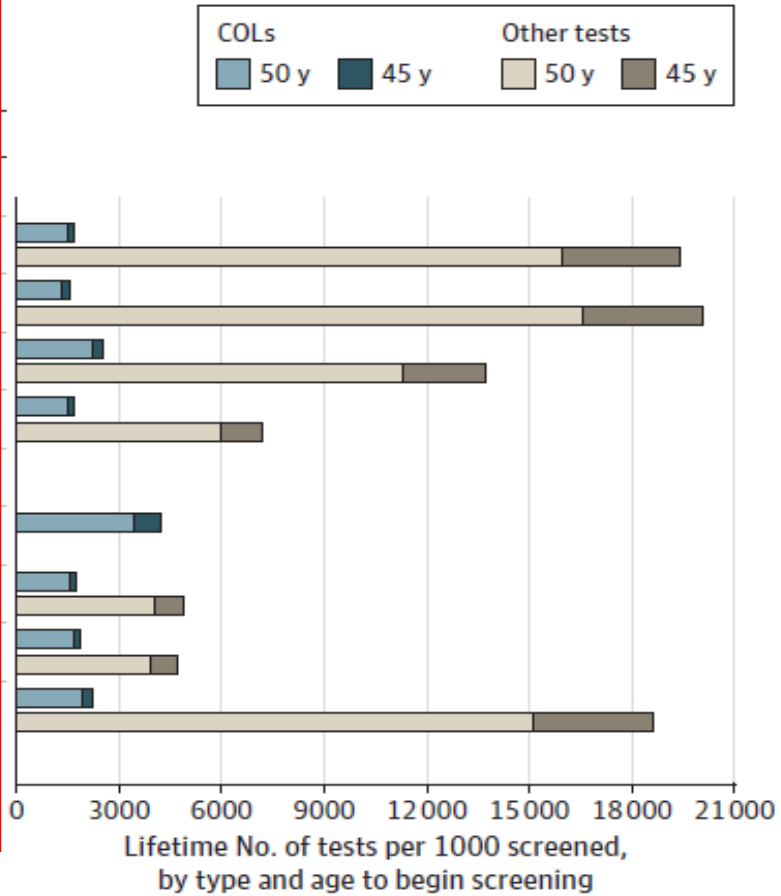


Jama 2021;(19):1965-1977

Additional Tests

B Burden: Estimated lifetime number of tests by type per 1000 individuals screened[a]

Screening modality and frequency	Mean estimate of lifetime No. of tests by type if start screening at age 50 y		Mean estimate of lifetime No. of tests by type if start screening at age 45 y		Additional tests if start screening at age 45 y by type	
	COLs	Other tests[e]	COLs	Other tests[e]	COLs	Other tests[e]
Stool tests						
FIT every year	1496	15 940	1682	19 412	186	3472
HSgFOBT every year[c,d]	1347	16 577	1535	20 077	188	3501
sDNA-FIT every year	2221	11 303	2531	13 693	311	2390
sDNA-FIT every 3 y[d]	1477	6006	1661	7194	184	1188
Direct visualization tests						
COL every 10 y	3464	0	4248	0	784	No change
CT colonography every 5 y	1590	4056	1750	4859	161	803
Flexible SIG every 5 y	1660	3946	1840	4723	179	777
Flexible SIG every 10 y plus FIT every year	1953	15 088	2224	18 641	270	3553



Jama 2021;(19):1965-1977

South African-Census Data 2011 and 2016

Table 2.2: Comparison of population by age and population group between 2011 and 2016

Age group	Census 2011						CS 2016				
	Black African	Coloured	Indian/Asian	White	Other	Total	Black African	Coloured	Indian/Asian	White	Total
0-4	4 830 442	470 090	90 795	268 267	25 857	**5 685 452**	5 198 715	425 736	99 033	253 035	**5 976 519**
5-9	4 054 019	421 038	82 584	245 567	16 543	**4 819 751**	4 830 123	429 693	97 642	262 337	**5 619 796**
10-14	3 817 863	420 683	85 223	257 353	13 764	**4 594 886**	4 394 841	432 046	94 389	268 527	**5 189 803**
15-19	4 171 450	431 263	98 556	284 896	17 312	**5 003 477**	4 280 505	435 718	97 503	290 756	**5 104 482**
20-24	4 479 848	428 159	115 949	313 616	36 970	**5 374 542**	4 461 738	429 435	107 905	303 257	**5 302 335**
25-29	4 156 759	395 750	125 521	336 355	44 932	**5 059 317**	4 480 050	394 900	117 762	287 792	**5 280 504**
30-34	3 237 677	326 803	113 398	318 329	32 802	**4 029 010**	3 684 311	365 969	124 933	279 475	**4 454 688**
35-39	2 674 154	319 231	108 120	342 316	23 945	**3 467 767**	3 076 199	373 672	119 302	278 789	**3 847 961**
40-44	2 164 738	319 279	95 904	351 473	17 225	**2 948 618**	2 501 203	371 467	104 947	282 967	**3 260 584**
45-49	1 902 133	294 467	85 621	325 185	12 877	**2 620 283**	2 047 049	314 268	93 272	328 341	**2 782 930**
50-54	1 559 926	247 535	75 783	324 539	10 506	**2 218 289**	1 651 800	269 044	82 138	331 527	**2 334 509**
55-59	1 242 201	186 148	65 332	295 596	8 132	**1 797 408**	1 359 060	216 131	70 394	328 611	**1 974 196**
60-64	913 441	137 050	55 194	273 657	6 425	**1 385 768**	1 064 664	158 159	58 907	291 188	**1 572 917**
65-69	601 060	86 285	38 277	227 308	4 875	**957 805**	758 139	109 354	45 604	266 190	**1 179 287**
70-74	485 852	60 311	25 084	173 434	3 649	**748 331**	522 978	67 901	30 093	203 762	**824 733**
75-79	310 708	37 441	13 954	116 922	2 242	**481 267**	277 528	42 013	19 407	147 389	**486 337**
80-84	218 145	19 278	7 155	77 073	1 265	**322 916**	152 206	20 150	7 851	70 800	**251 007**
85+	180 520	14 591	4 479	54 949	1 133	**255 673**	150 495	13 871	4 750	41 949	**211 064**
Total	**41 000 938**	**4 615 401**	**1 286 930**	**4 586 838**	**280 454**	**51 770 560**	**44 891 603**	**4 869 526**	**1 375 834**	**4 516 691**	**55 653 654**

Census Data 2011 and 2016

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National Cancer Registry

The frequency of histologically diagnosed cases of colorectal cancer in South Africa for 2019 was as follows (National Cancer Registry, 2019):

Group - Males 2019	0 – 19 Years	20 – 29 Years	30 – 39 Years	40 – 49 Years	50 – 59 Years	60 – 69 Years	70 – 79 Years	80+ Years
All males	1	26	121	253	513	689	529	208
Asian males	0	0	8	17	36	45	29	11
Black males	0	21	77	107	208	223	84	32
Coloured males	1	3	15	39	80	94	68	26
White males	0	4	21	90	189	327	348	139

Group – Females 2019	0 – 19 Years	20 – 29 Years	30 – 39 Years	40 – 49 Years	50 – 59 Years	60 – 69 Years	70 – 79 Years	80+ Years
All females	3	26	110	242	417	562	394	200
Asian females	0	0	2	15	24	43	20	4
Black females	2	15	71	115	193	185	80	23
Coloured females	1	5	11	40	70	84	50	29
White females	0	6	26	71	130	250	244	144

N.B. In the event that the totals in any of the above tables do not tally, this may be the result of uncertainties as to the age, race or sex of the individual. The totals for 'all males' and 'all females', however, always reflect the correct totals.

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Recommendations for Follow-Up After Colonoscopy and Polypectomy: A Consensus Update by the US Multi-Society Task Force on Colorectal Cancer

Samir Gupta,[1,2,3] David Lieberman,[4] Joseph C. Anderson,[5,6,7] Carol A. Burke,[8] Jason A. Dominitz,[9,10] Tonya Kaltenbach,[11,12] Douglas J. Robertson,[5,6] Aasma Shaukat,[13,14] Sapna Syngal,[15,16] and Douglas K. Rex[17]

American Society for Gastrointestinal Endoscopy

Gupta Gastro Endos 2020 91(3):463-485

US Multi-Society Task Force

Recommendations for post-colonoscopy follow-up in average risk adults with normal colonoscopy or adenomas[1]

Baseline finding		Risk compared with normal colonoscopy	Recommended interval for surveillance colonoscopy	Strength of recommendation	Quality of evidence
Normal		n/a	10 years[2]	Strong	High
1 to 2 tubular adenomas < 10mm		↔	7 to 10 years[3]	Strong	Moderate
3 to 4 tubular adenomas < 10mm		↑	3 to 5 years	Weak	Very low
5 to 10 tubular adenomas < 10mm		↑↑	3 years	Strong	Moderate
> 10 adenomas on single exam[4]		↑↑	1 year	Weak	Very low
Advanced adenoma	Any adenoma ≥ 10mm	↑↑↑	3 years	Strong	High
	Any adenoma with tubulovillous or villous histology	↑↑	3 years[5]	Strong	Moderate
	Any adenoma with high grade dysplasia	↑↑	3 years[5]	Strong	Moderate
	Piecemeal resection of adenoma ≥ 20mm	↑↑↑	6 months	Strong	Moderate[6]

Gupta Gastro Endos 2020 91(3):463-485

US Multi-Society Task Force

Recommendations for second surveillance stratified by adenoma findings at baseline and first surveillance

Baseline finding	Recommended interval for first surveillance	Finding at first surveillance	Recommended interval for next surveillance
1–2 tubular adenomas < 10 mm	7–10 y	Normal colonoscopy*	10 y
		1–2 tubular adenomas < 10 mm	7–10 y
		3–4 tubular adenomas < 10 mm	3–5 y
		Adenoma ≥ 10 mm in size; or adenoma with tubulovillous/villous histology; or adenoma with high grade dysplasia; or 5–10 adenomas < 10 mm	3 y
3–4 tubular adenomas < 10 mm	3–5 y	Normal colonoscopy*	10 y
		1–2 tubular adenomas < 10 mm	7–10 y
		3–4 tubular adenomas < 10 mm	3–5 y
		Adenoma ≥ 10 mm in size; or adenoma with tubulovillous/villous histology; or adenoma with high grade dysplasia; or 5–10 adenomas < 10 mm	3 y
Adenoma ≥ 10 mm in size; or adenoma with tubulovillous/villous histology; or adenoma with high grade dysplasia; or 5–10 adenomas < 10 mm	3 y	Normal colonoscopy*	5 y
		1–2 tubular adenomas < 10 mm	5 y
		3–4 tubular adenomas < 10 mm	3–5 y
		Adenoma ≥ 10 mm in size; or adenoma with tubulovillous/villous histology; or adenoma with high grade dysplasia; or 5–10 adenomas < 10 mm	3 y

*Normal colonoscopy is defined as colonoscopy where no adenoma, SSP, or CRC is found.

Gupta Gastro Endos 2020 91(3):463-485

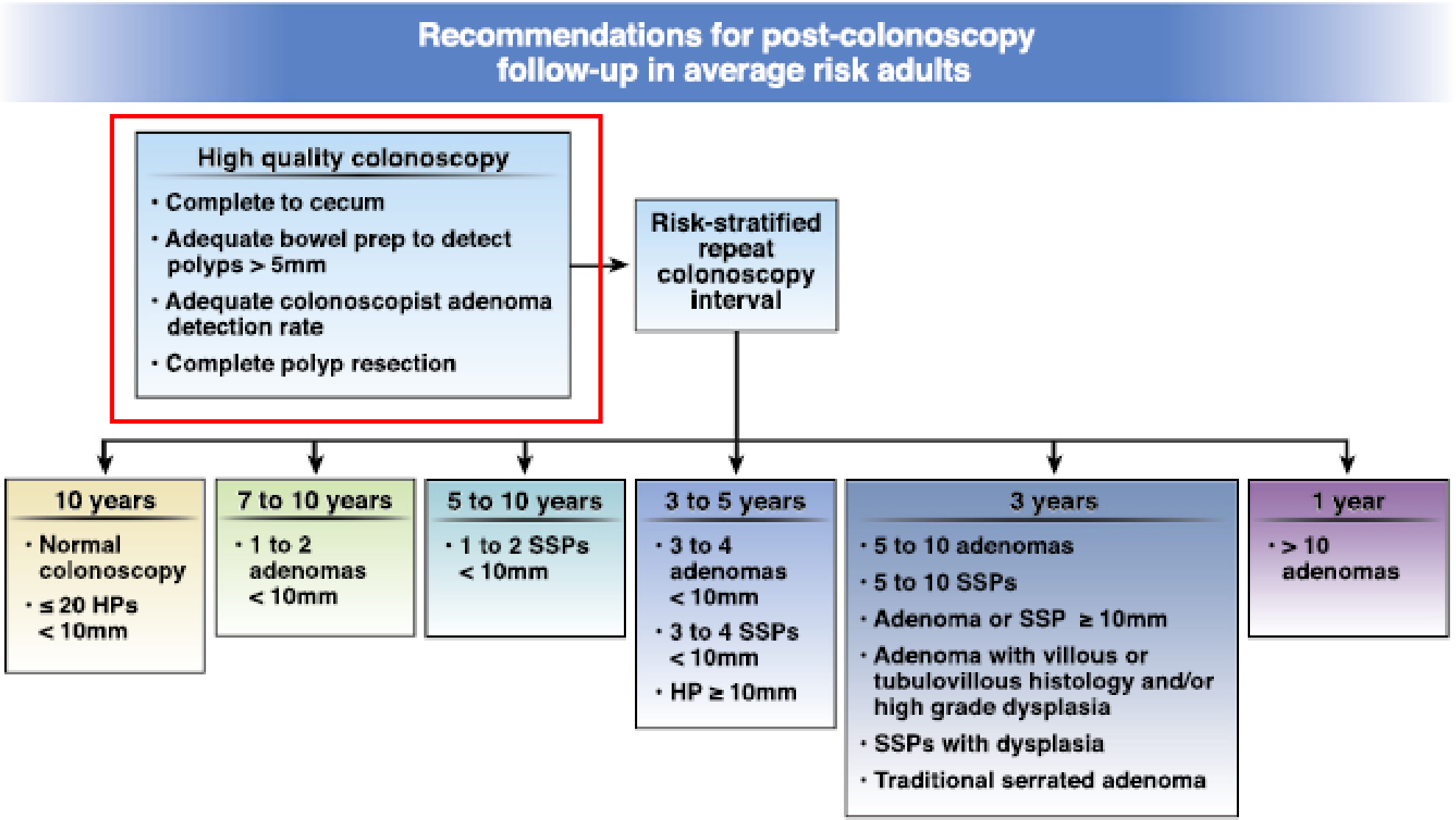
US Multi-Society Task Force

Recommendations for post-colonoscopy follow-up in average risk adults with serrated polyps[1]

	Baseline finding	Risk compared with normal colonoscopy	Recommended interval for surveillance colonoscopy	Strength of recommendation	Quality of evidence
	≤ 20 hyperplastic polyps in rectum or sigmoid colon < 10mm[7]	↔	10 years[2]	Strong	Moderate
	≤ 20 hyperplastic polyps proximal to sigmoid colon < 10mm[7]	↔	10 years	Weak	Very low
	1 to 2 SSPs < 10mm	↔ or ↑	5 to 10 years	Weak	Very low
	3 to 4 SSPs < 10mm	↑	3 to 5 years	Weak	Very low
	5 to 10 SSPs < 10mm	↑↑	3 years	Weak	Very low
Large or advanced serrated polyp	Hyperplastic polyp ≥ 10mm	↑↑	3 to 5 years[3]	Weak	Very low
	SSP ≥ 10mm	↑↑↑	3 years	Weak	Very low
	SSP with dysplasia	↑↑↑	3 years[5]	Weak	Very low
	Traditional serrated adenoma	↑↑↑	3 years[5]	Weak	Very low
	Piecemeal resection of SSP ≥ 20mm	↑↑↑	6 months	Strong	Moderate[6]

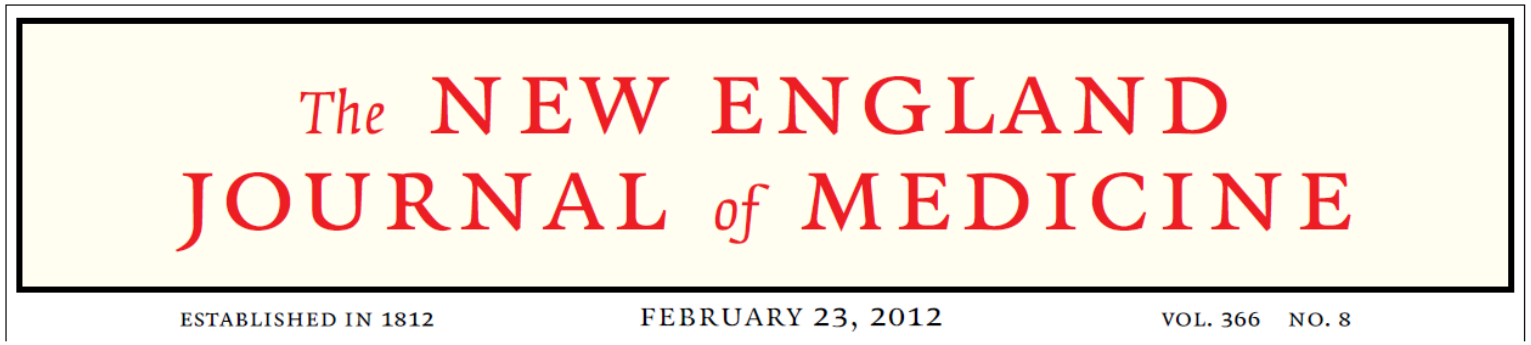
Gupta Gastro Endos 2020 91(3):463-485

US Multi-Society Task Force



Gupta Gastro Endos 2020 91(3):463-485

Polypectomy Reduces CRC deaths

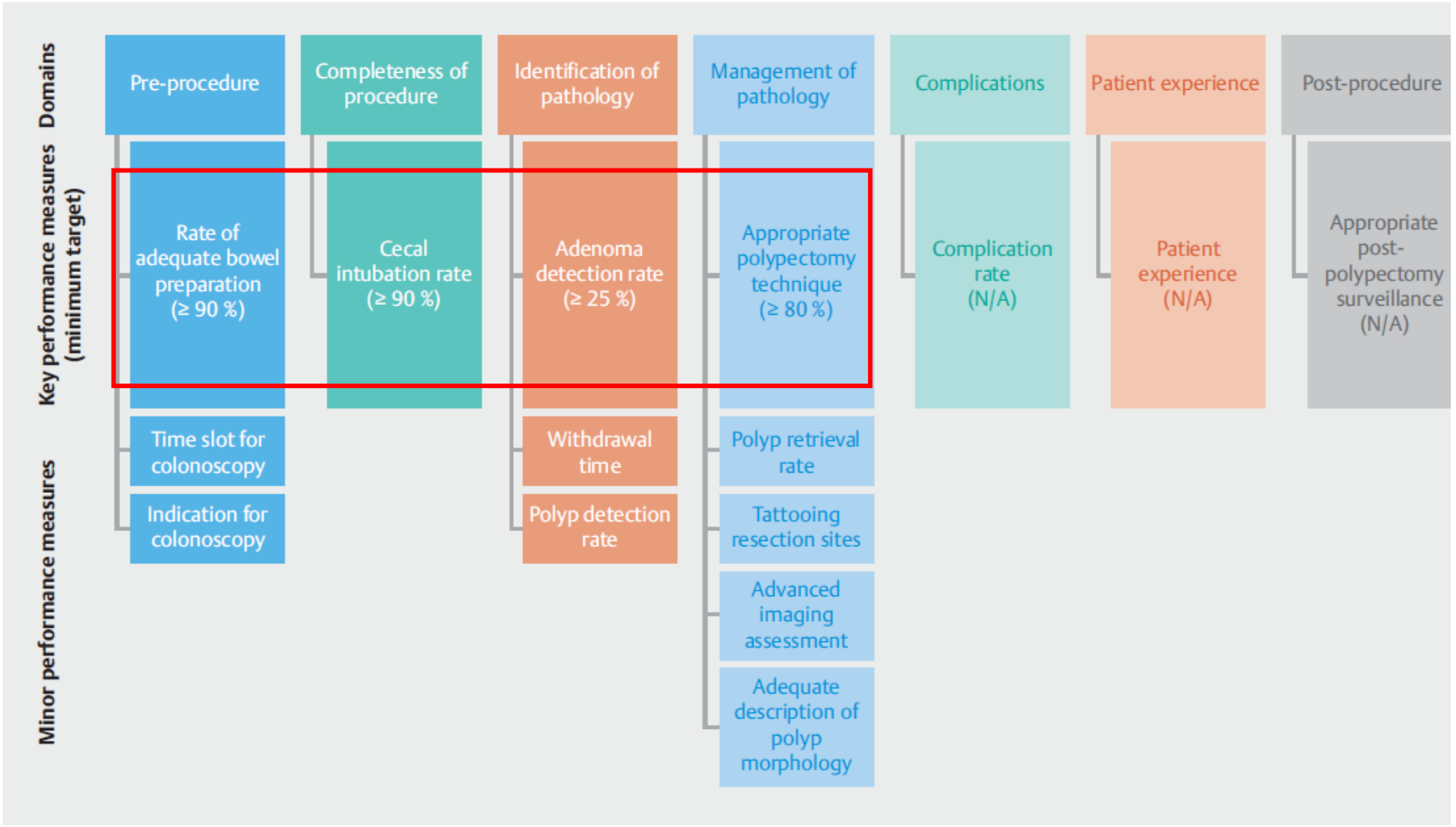


Colonoscopic Polypectomy and Long-Term Prevention of Colorectal-Cancer Deaths

Ann G. Zauber, Ph.D., Sidney J. Winawer, M.D., Michael J. O'Brien, M.D., M.P.H., Iris Lansdorp-Vogelaar, Ph.D., Marjolein van Ballegooijen, M.D., Ph.D., Benjamin F. Hankey, Sc.D., Weiji Shi, M.S., John H. Bond, M.D., Melvin Schapiro, M.D., Joel F. Panish, M.D., Edward T. Stewart, M.D., and Jerome D. Waye, M.D.

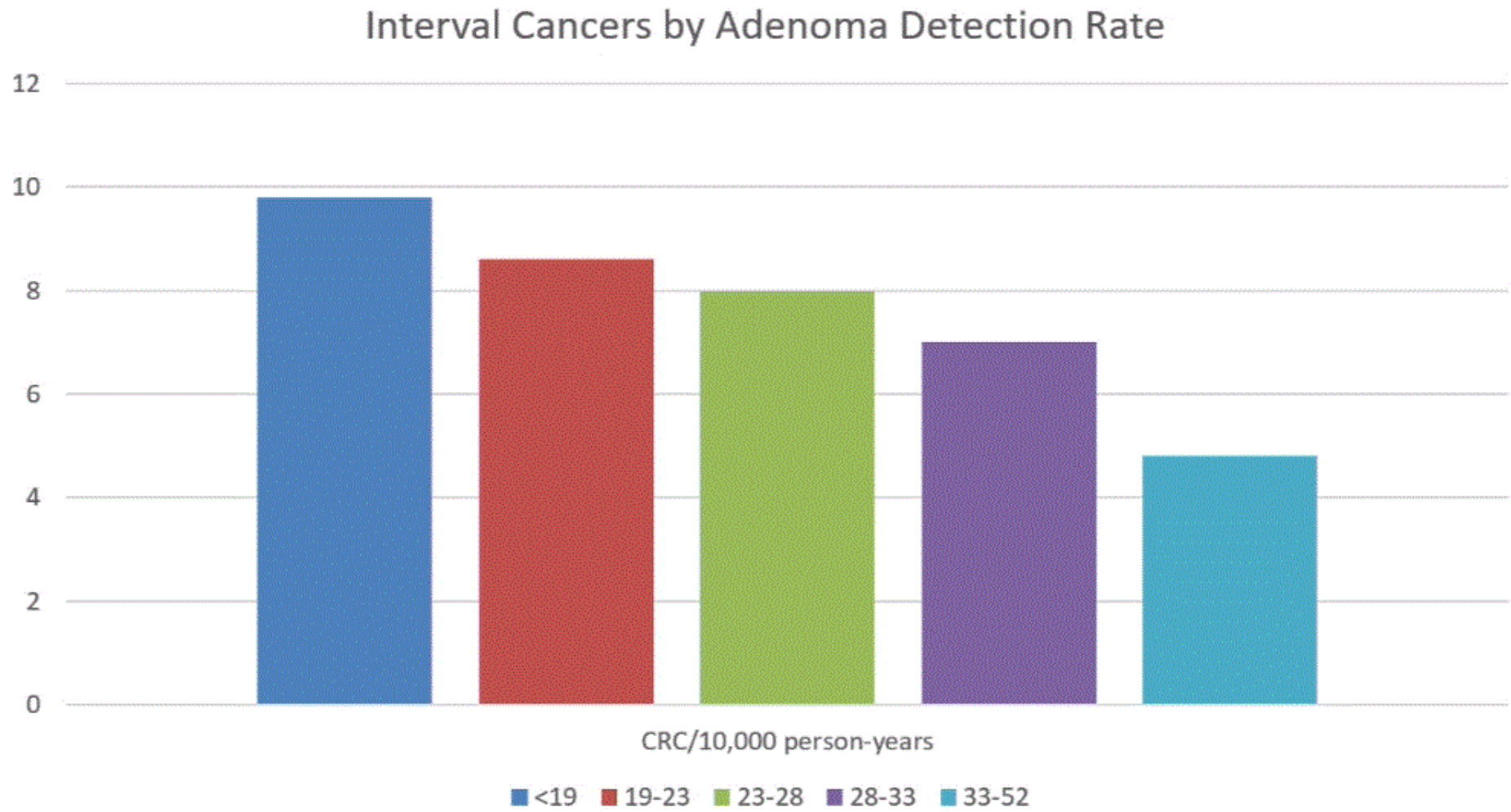
- 53% reduction in colorectal cancer mortality

ESGE



Kaminski Endoscopy 2017;49:378-397

Adenoma Detection Rate



Each 1% increase in ADR = 3% reduction in interval CRC

Corly NEJM 2014;370:1298-306

ADR

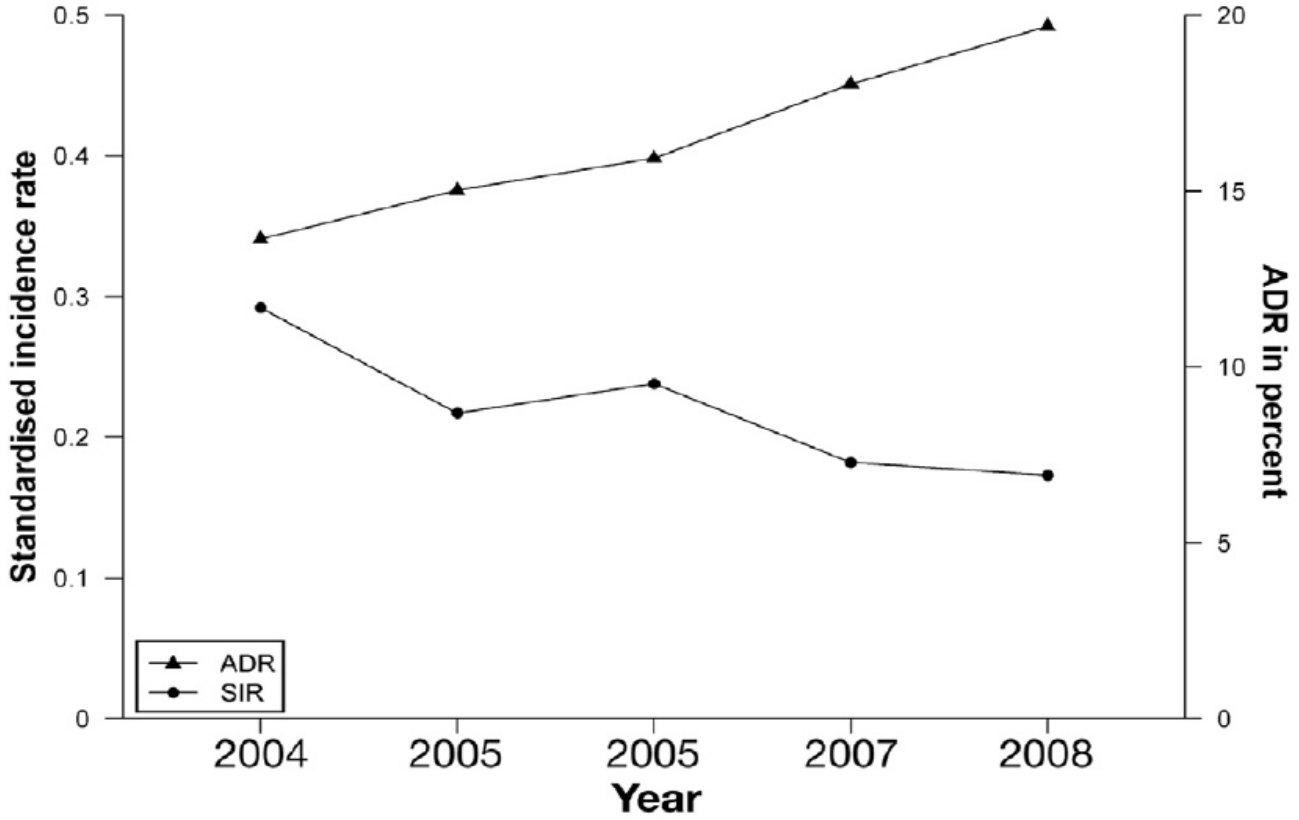
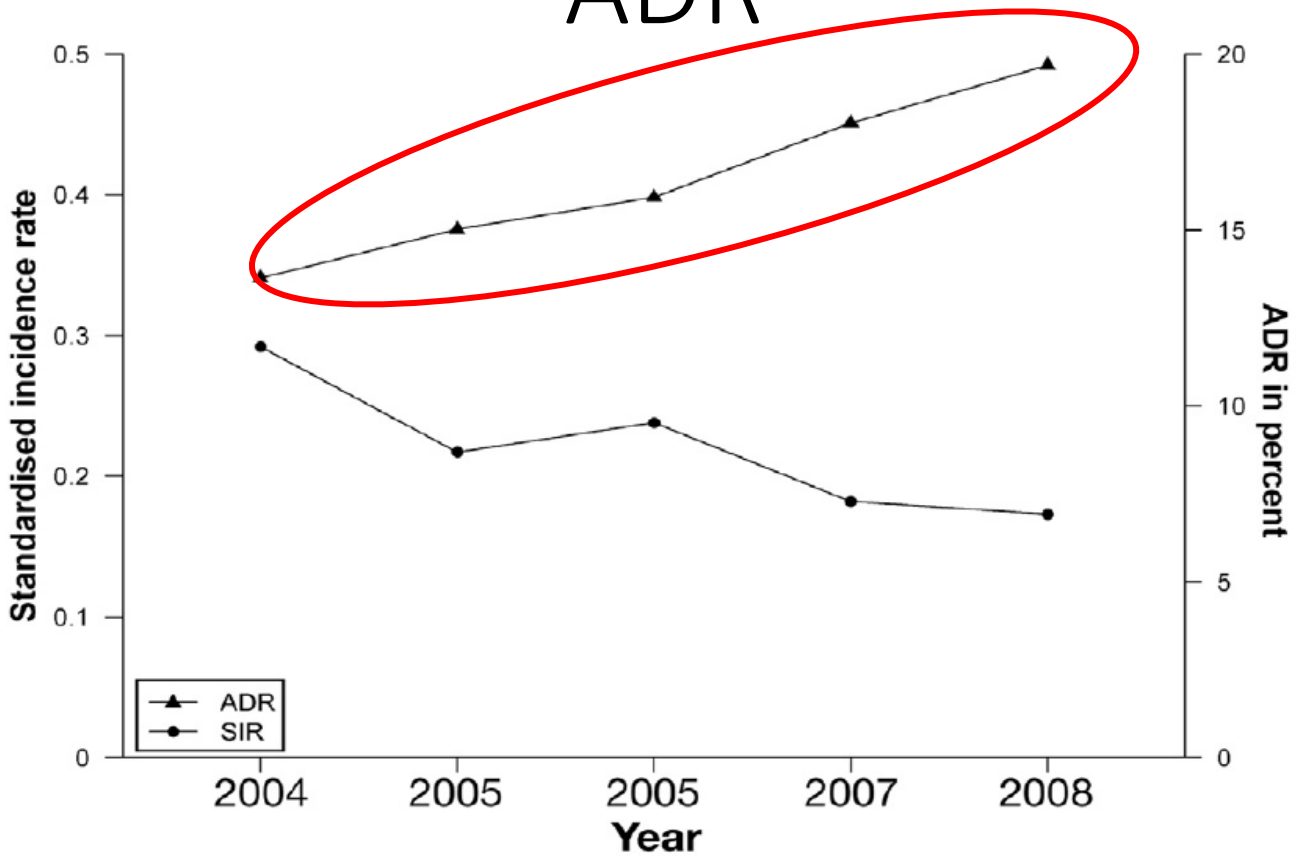


Figure 2. Time trend for the standardized interval colorectal cancer rates (per 100,000 patient-years of follow-up evaluation), and adenoma detection rates at the program level. SIR, standardized incidence rate.

Kaminski Gastroenterology 2017;153:98-108

ADR



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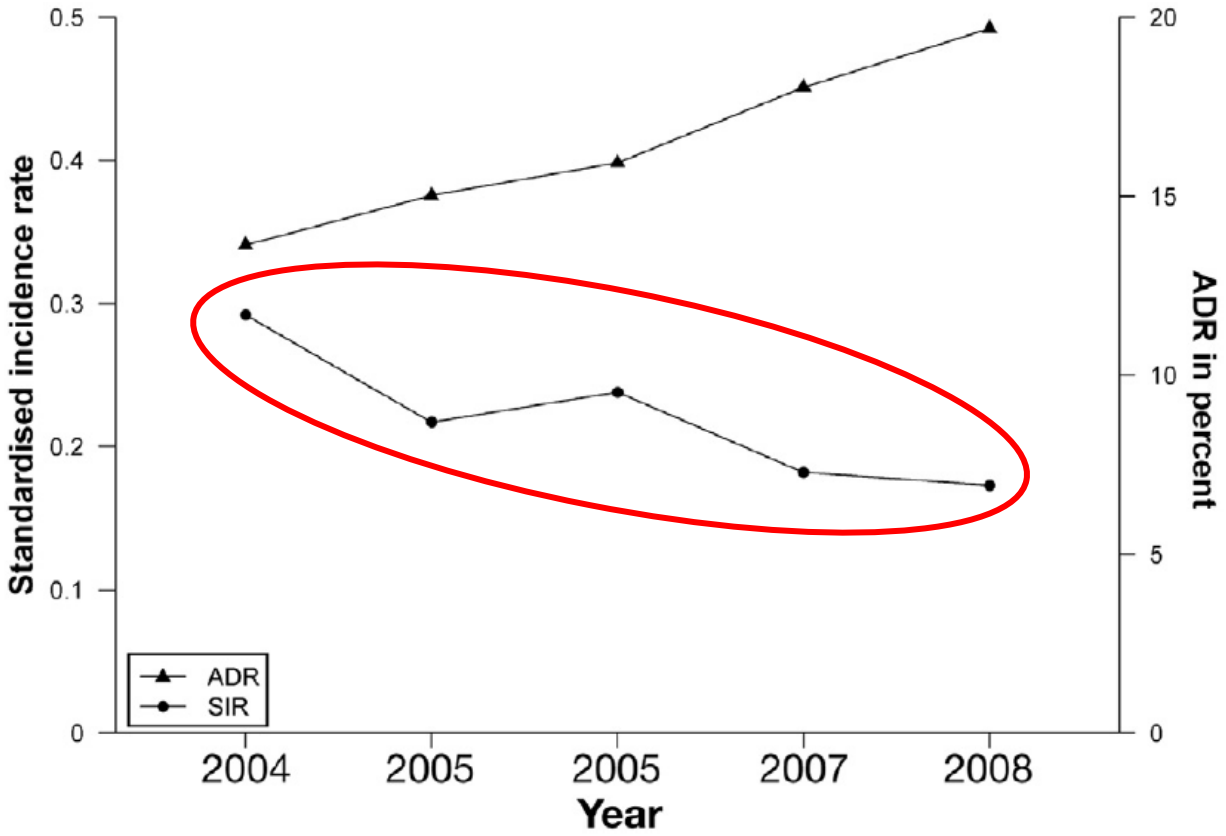

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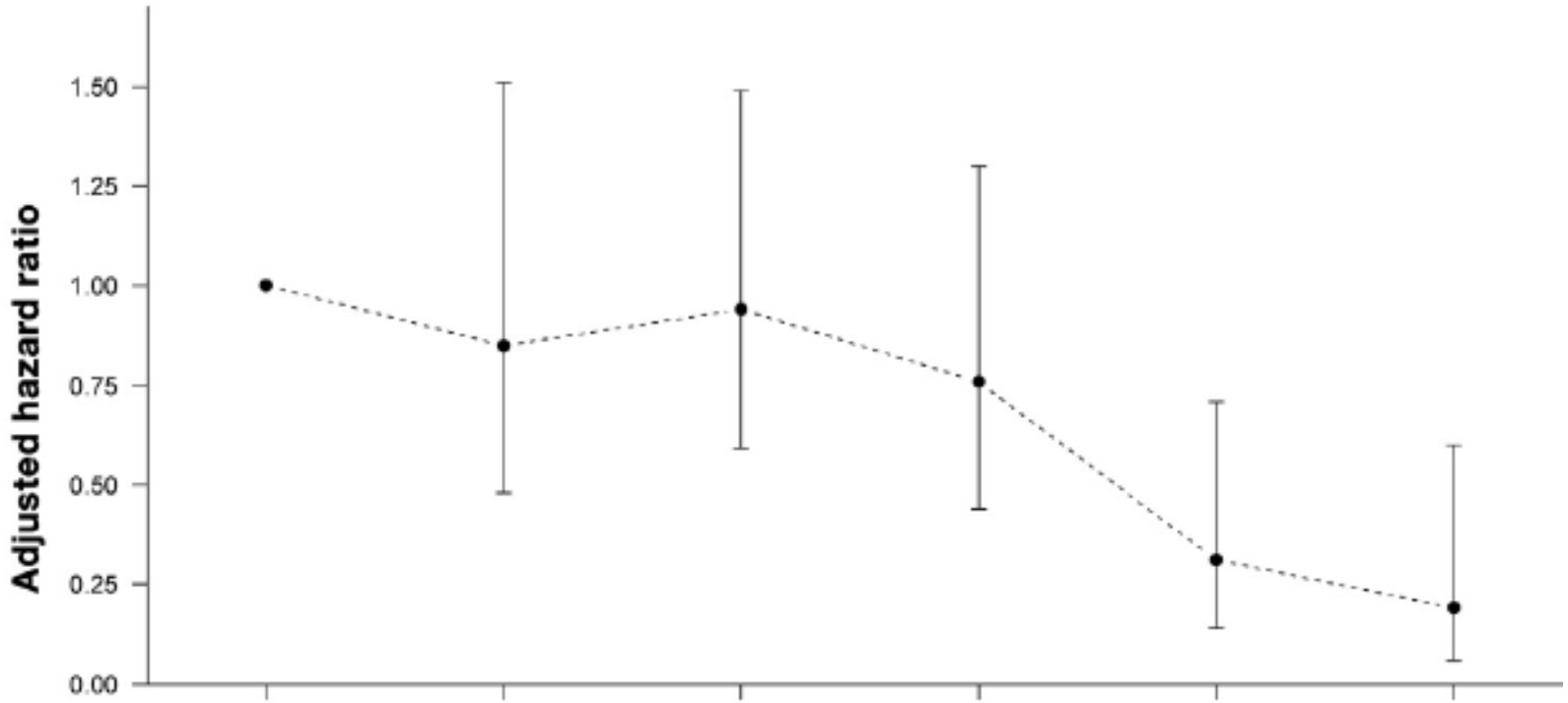
Kaminski Gastroenterology 2017;153:98-108

ADR Improvement

Figure 3. Adjusted hazard rates for interval colorectal cancer according to ADR improvement category. Endoscopists in the no improvement category scored a mean ADR of 10.8%, those reaching categories 2, 3, 4, or 5, or those consistently in category 5, scored a mean ADR of 13.1% (at least 11.22%), 17.1% (at least 15.11%), 21.6% (at least 19.18%), 28.8% (at least 24.57%), and 31.3% (at least 24.57%), respectively. *Vertical lines* indicate 95% CIs. HR, hazard ratio; p–yrs, patient-years.



	No improvement	Improvement from 1 to 2	Improvement from 1 or 2 to 3	Improvement from 1–3 to 4	Improvement from 1–4 to 5	Remain in 5th
HR	1.00	0.90	0.74	0.64	0.27	0.18
95% CI		(0.61, 1.34)	(0.47, 1.16)	(0.41, 1.01)	(0.12, 0.63)	(0.06, 0.56)
No. of cancers/ 100,000 p–yrs	25.34	22.67	18.86	16.25	7.09	4.49

Kaminski Gastroenterology 2017;153:98-105

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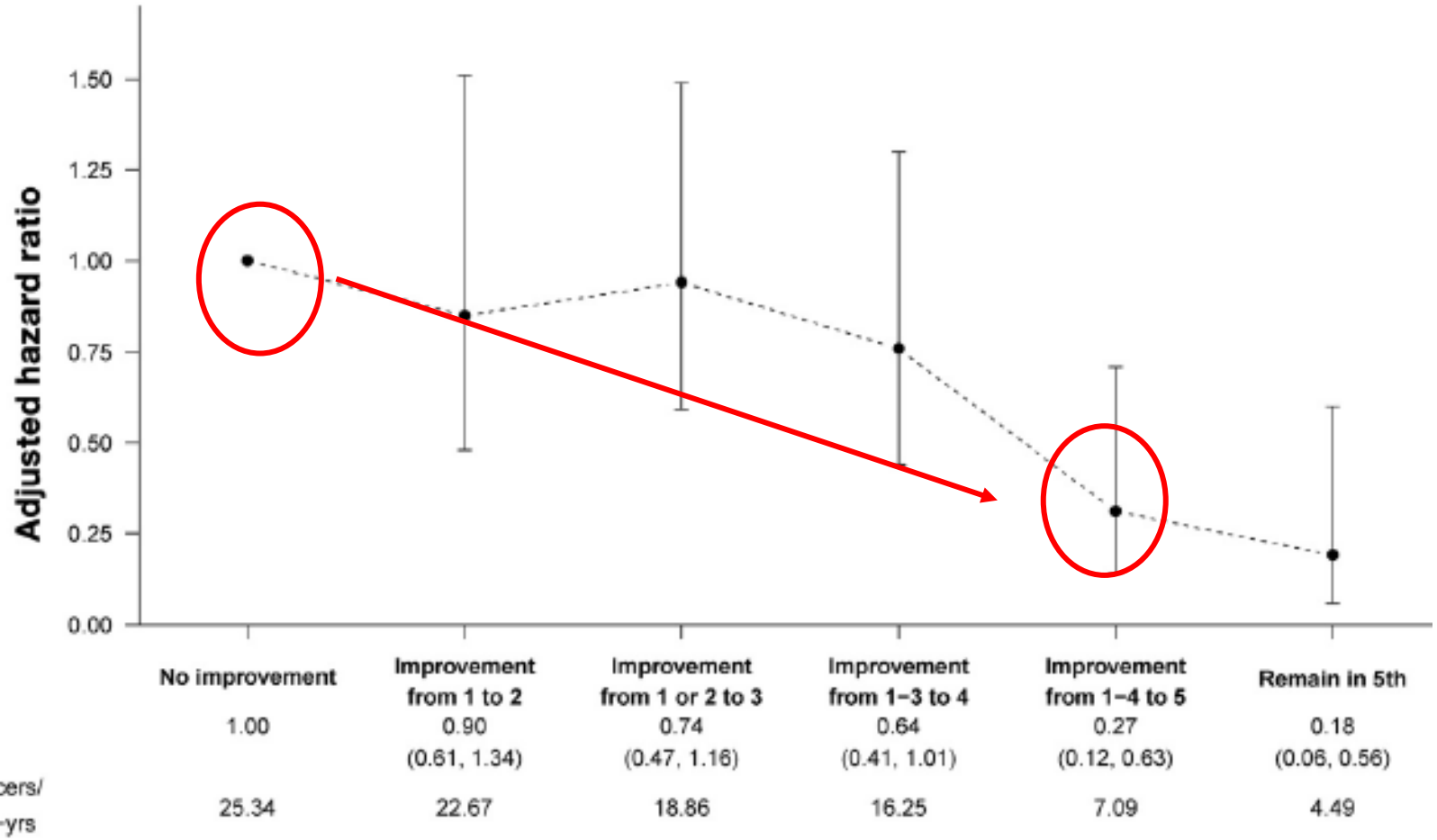

Kaminski Gastroenterology 2017;153:98-105

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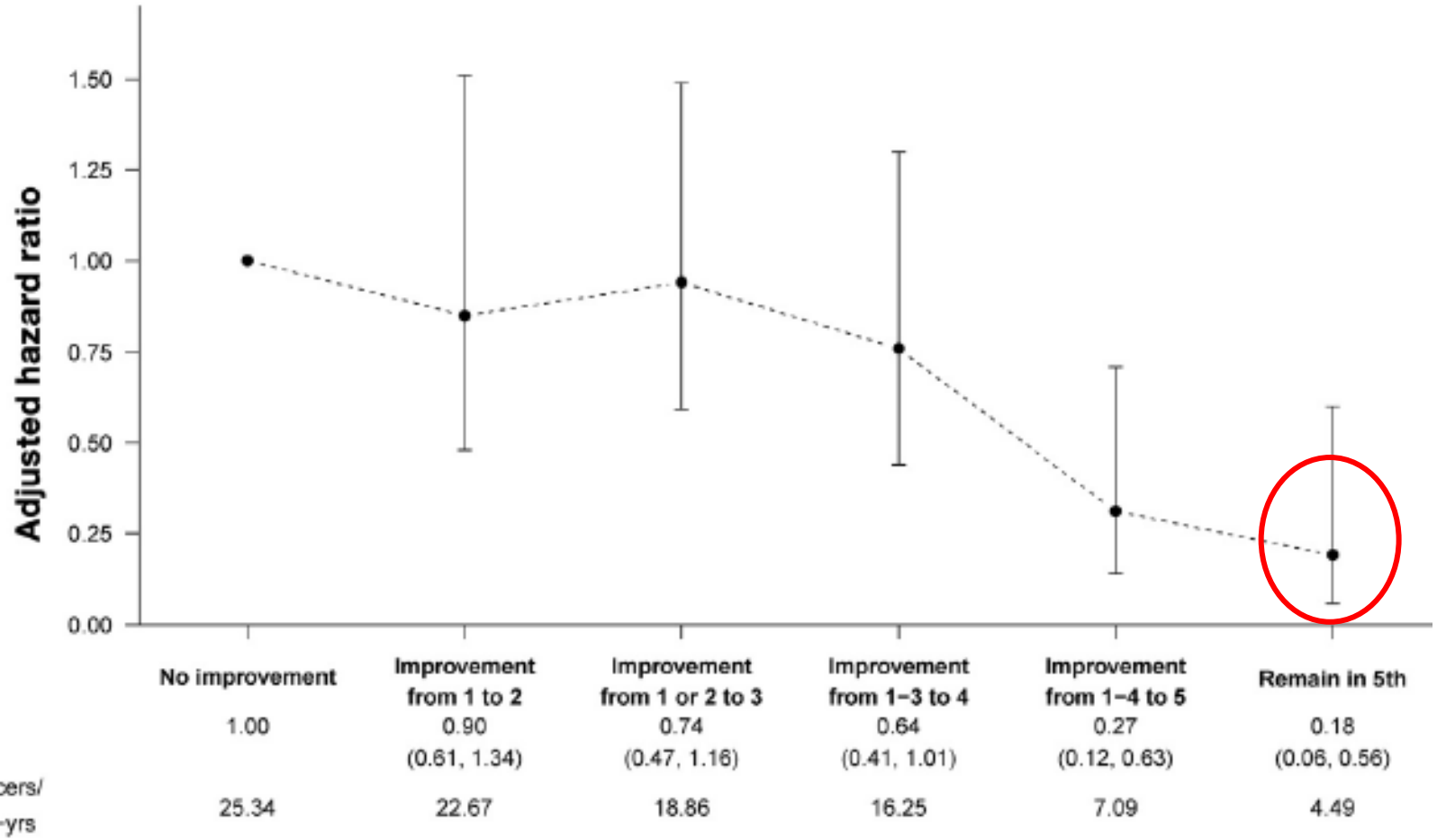
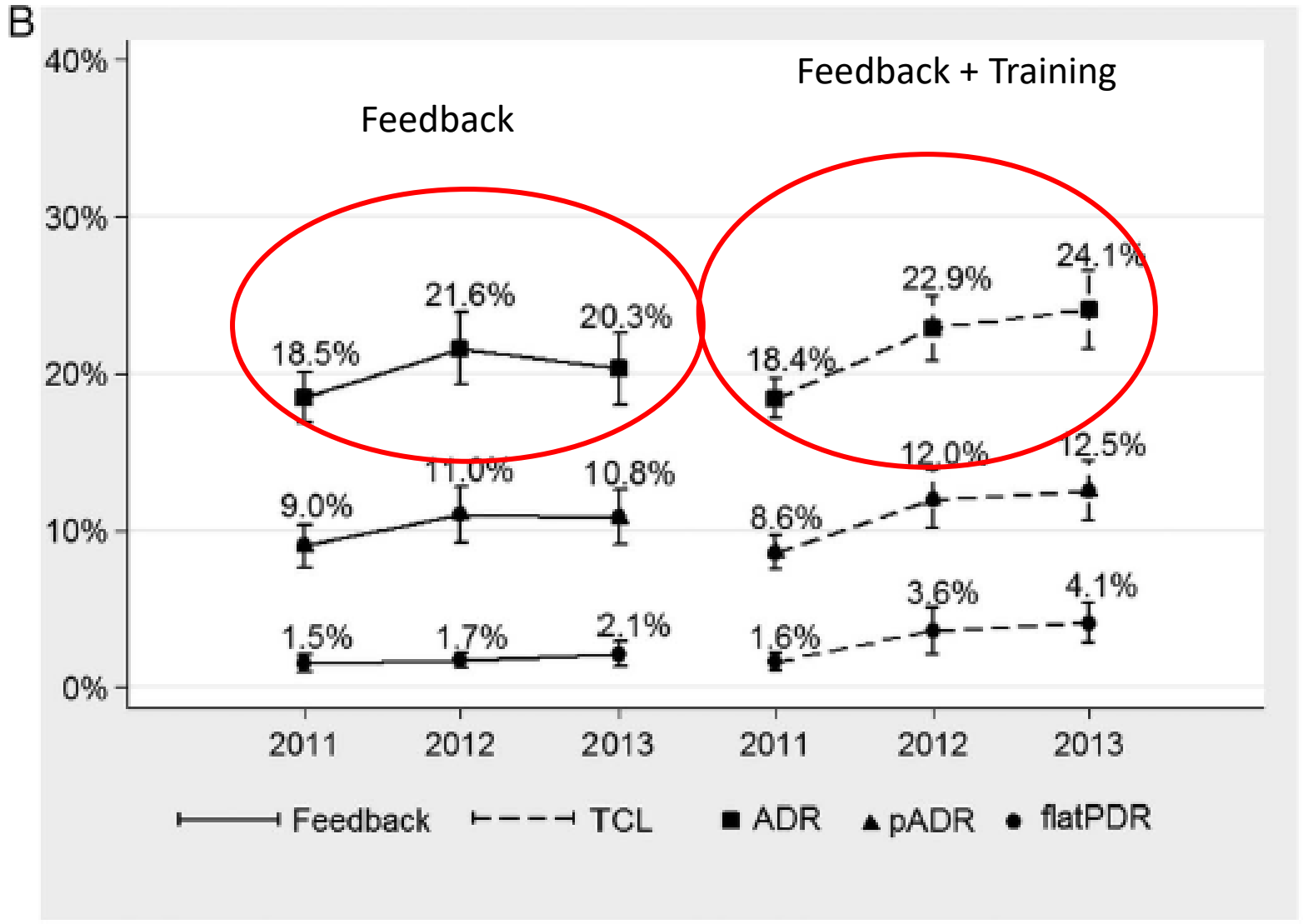
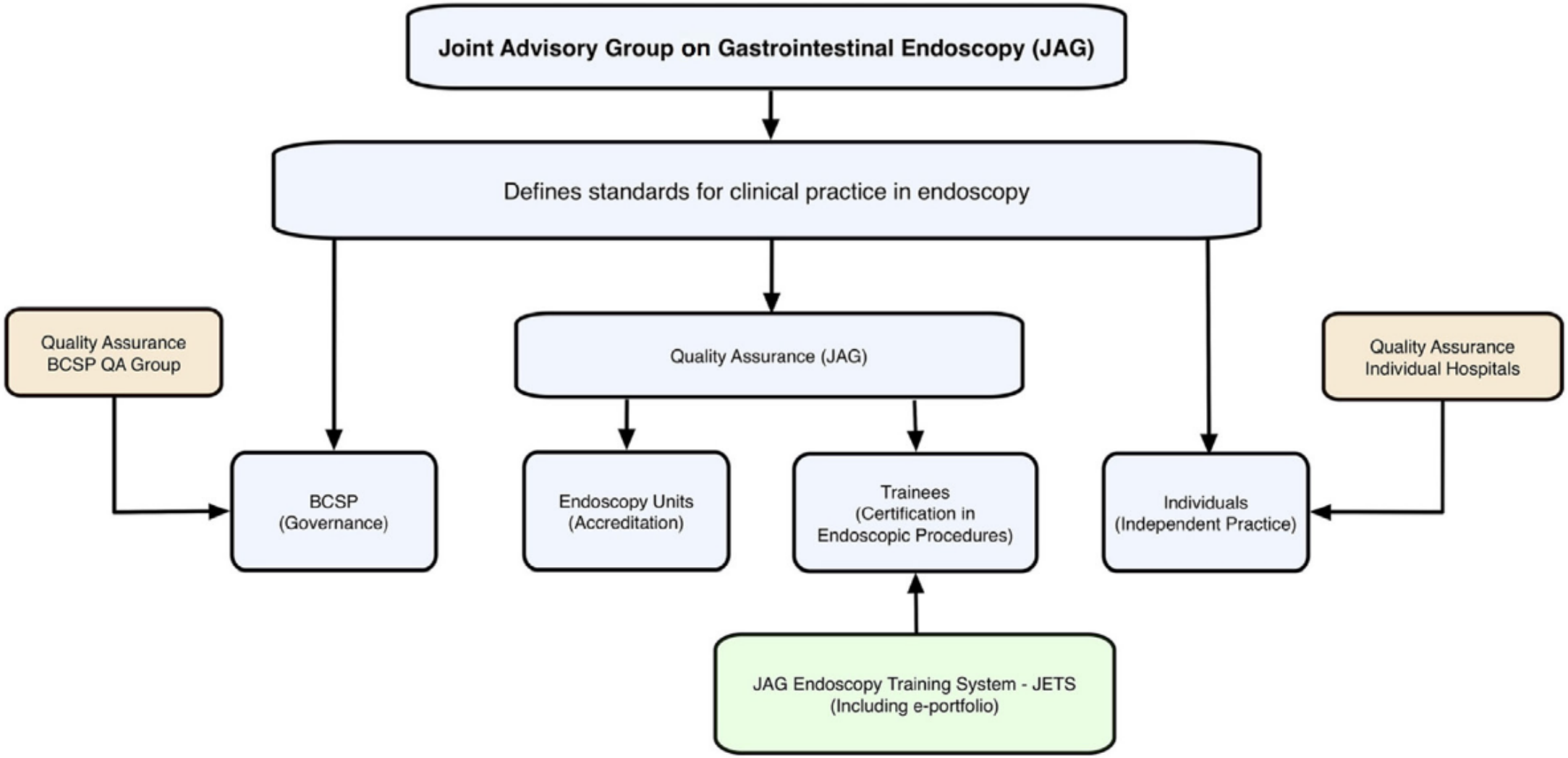


Kaminski Gastroenterology 2017;153:98-108

Feedback vs Feedback and Training



Kaminski Gut 2016;65:616-624



Siau FL Gastro 2019;10:93-106

Table 4 International use and involvement of JAG services (*based on JAG International Committee minutes from July 2016*) – courtesy of JAG office

Nation	Level of interaction with JAG
Australia	▶ JAG are advising *Queensland Nursing and Midwifery Office* regarding roll-out of training programme.
Canada	▶ Services have permission to use offline version of DOPS forms. ▶ Implementation of Canadian GRS.[64]
Hong Kong	▶ Implementation of nurse endoscopist bowel cancer screeners trained via JAG curriculum.[134]
Iraq	▶ Benchmarking of Iraqi endoscopy services using GRS.[69]
Ireland	▶ Services completed GRS census (36 public and 5 private endoscopy services registered with JAG). ▶ Majority of services working towards accreditation. ▶ Eight services accredited.
Malawi	▶ JAG supported training courses run in Malawi.[70 71]
Netherlands	▶ Use of GRS tools.[116]
New Zealand	▶ Services previously completed GRS census. ▶ On hold pending conversations with the Ministry of Health regarding future direction of work.[68]
Norway	▶ Interest in GIN courses and e-Portfolio, with members of Norway screening programme attending a GIN training the nurse trainer course.
Poland	▶ JAG-based Training Colonoscopy Leaders Course.[38]
Portugal	▶ JAG supported colonoscopy upskilling and Training and Trainer courses (2015).
Saudi Arabia	▶ King Abdullah Medical City Hospital leads approached JAG to ask about possibility of becoming JAG accredited. ▶ Conference call held to scope work and a proposal has been made to offer access to GRS and support via calls and documentation in the first instance.
Singapore	▶ Services have permission to use offline version of DOPS forms.
South Africa	▶ JAG supported colonoscopy upskilling and Training and Trainer courses (2015/2016).
Spain	▶ A trial version of the GRS was requested by Madrid Hospital and set up.
USA	▶ JAG setting up teleconference with representatives from the University of Colorado regarding EUS and ERCP training.

Siau FL Gastro 2019;10:93-106

JAG

Criteria for provisional certification	Requirement
Caecal intubation rate	≥ 90%
Unassisted physically (the trainer does not take the scope)	≥ 90%
Basic skills lower GI course	Attended
Total lifetime procedure count	≥200
Procedures in last 3 months	≥15
Lifetime formative lower GI DOPS Trainees are recommended to complete DOPS throughout training, 1 DOPS form for every 10 cases	≥20
5 most recent formative lower GI DOPS scoring 'competent for independent practice'. -DOPS forms must be completed within 12 months of application for certification. -Up to 10% can score 'minimal supervision'. -No item in the last 5 DOPS can be scored 'maximum supervision' or 'significant supervision'.	≥90%
Formative DOPyS (level 1)	≥4
4 most recent formative lower GI DOPyS (level 1) all items scoring 'Competent for independent practice'	100%

JAG

Criteria for full criteria	Requirement
Colon provisional certification	Granted
Caecal intubation rate	≥90%
Unassisted (physically)	≥90%
Polyp detection and removal	≥10%
Sedation rate for patients aged under 70 years old.	≤5mgs midazolam
Sedation rate for patients aged 70 or over	≤2.5mgs midazolam
Analgesia rate for patients aged under 70 years old.	≤50mg Pethidine ≤100µg Fentanyl
Analgesia rate for patients aged 70 or older	≤25mg Pethidine ≤50µg Fentanyl
Serious complication rate	≤0.5%**
Number of procedures completed since award of provisional certification	≥100
Recommended lifetime procedure count	≥300
Procedures in previous 3 months	≥15
Formative DOPyS (level 2) A level 2 DOPyS records a polyp which is greater than or equal to 10mm in size.	≥4
4 most recent formative lower GI DOPyS (level 2) all items scoring 'Competent for independent practice'	100%
Polypectomy techniques assessed by DOPyS (level 2) – Stalked polyps	≥1
Polypectomy techniques assessed by DOPyS (level 2) - Small sessile lesions/ EMR	≥1

Dutch Colorectal screening programme

TABLE 1. Overview of all quality criteria for endoscopists performing colonoscopy within the Dutch colorectal cancer screening program, defined by the national working group for quality requirements of colonoscopy[28,29]

Quality criteria	Description	Accreditation criterion	Audit criterion
Qualifications and experience			
Professional registration	Endoscopists are responsible for professional and re-registration according to the Individual Health Care Occupations Act	Demonstrable	Demonstrable
Accreditation	Accreditation based on the final attainment levels for an endoscopists according to the Dutch Society of Gastroenterologists (NVMDL)	Demonstrable	Demonstrable
Number of colonoscopies	Total number of colonoscopies performed	≥500 lifetime	≥200 per year
Number of polypectomies	Number of polypectomies performed	≥50 lifetime	≥50 per year
Completeness of examination			
(Unadjusted) cecal intubation rate	The percentage of colonoscopies with cecal intubation	≥90% (unadjusted)	≥95% (unadjusted)
Bowel preparation	The percentage of colonoscopies in which the colon is sufficiently clean to inspect the mucosa (Boston Bowel Preparation Scale ≥ 6)	—	≥90%
Withdrawal time	The percentage of negative colonoscopies* with a withdrawal time of at least 6 minutes	—	≥90%

Bronzwaer Gastro Endo 2019;89:1-13

Dutch Colorectal screening programme

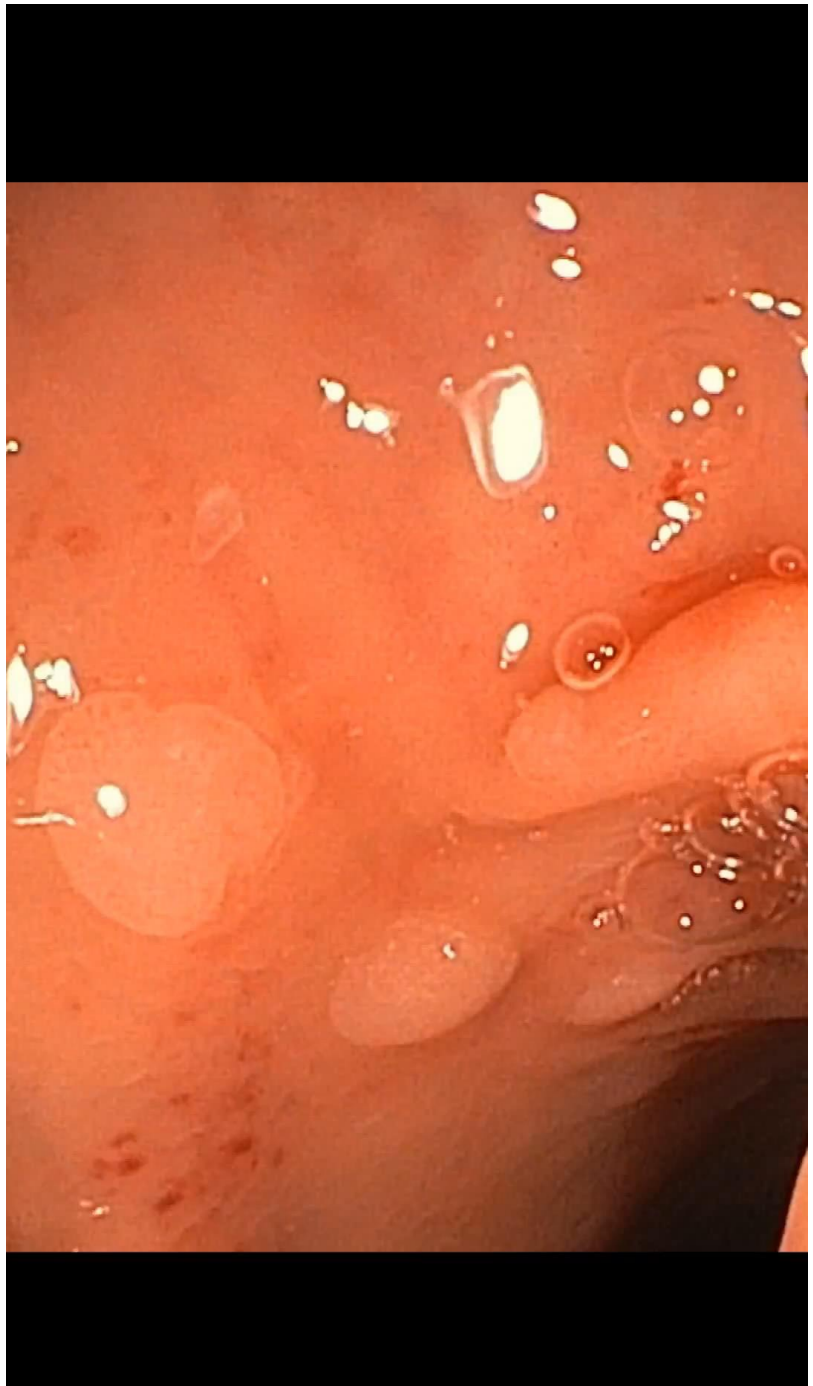
Quality criteria	Description	Accreditation criterion	Audit criterion
Qualifications and experience			
Detection rates			
Cancer detection rate	The percentage of colonoscopies in which (more than) one cancer is detected	—	Monitoring
Adenoma detection rate	The percentage of colonoscopies in which (more than) one adenoma is detected	≥20%	≥30%
MAP	The mean number of adenomas per procedure (colonoscopy)	—	Monitoring
MAP+	The mean number of adenomas per positive procedure (colonoscopy)	—	Monitoring
Removal rates			
Polyp removal rate	The percentage of polyps removed relative to the total number of polyps detected at colonoscopy	≥90%	≥90%
Polyp retrieval rate	The percentage of polyps retrieved for histologic evaluation relative to the total number of polyps detected at colonoscopy	Monitoring	≥90%
Tattooing			
Tattooing	The percentage of cancers that were tattooed, except from those cancers located in the cecum and up to 4 cm from the dentate line	—	Monitoring

Bronzwaer Gastro Endo 2019;89:1-13

Summary

- Screening is important
  - Type
- Age
  - Starting and stopping
- Family History
- Good quality endoscopy
  - Training
  - ADR
- Data??

Questions



Tygerberg Hospital polyps

Table 2. Post-Colonoscopy Colorectal Cancer Subcategories

	PCCRC subcategories			
		Non-interval type		
	Interval type	Type A	Type B	Type C
	Detected before recommended screening/surveillance interval	Detected at recommended screening/surveillance interval	Detected after recommended screening/surveillance interval	Where no screening/surveillance interval had been recommended
Case examples (see Supplementary Material for further examples)	Patient with 2 small adenomas is advised to return for surveillance in 5 y; 4 y later anemia develops; colonoscopy reveals CRC	Patient with a 15-mm adenoma is advised to return for surveillance in 3 y. On surveillance at 3 y CRC is found	Patient with 3 small adenomas is advised to return for surveillance in 3 y. Patient misses this, returns 4 y later with CRC.	Patient investigated for history of change in bowel habit—colonoscopy normal. No further investigation recommended. Five years later patient develops symptoms and a colonoscopy reveals CRC.
Possible implication other than colonoscopy quality (note all may relate to poor-quality index colonoscopy)	The recommended screening/surveillance interval may be too long	The recommended screening/surveillance interval may be too long	Reinforces importance of adherence to recommended screening/surveillance intervals	Review whether subsequent screening/surveillance may have been appropriate