

Highlights 2023

Kolorektales Karzinom (CRC) Kolonpolypen

Peter Bauerfeind
St.Anna Luzern / Klinik im Park Zürich

Highlights 2023

Screening
Outcome
Qualität
Intervall-Karzinome

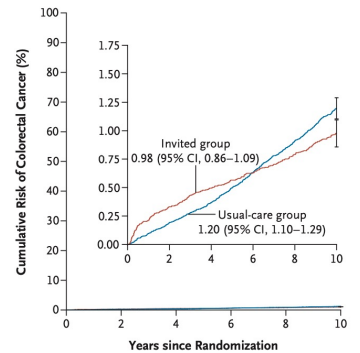
Screening-Sigmoidoskopie Ergebnis nach 15 Jahren

Bretthauer et al. NEJM 2022;387 **COLOSCOPY**

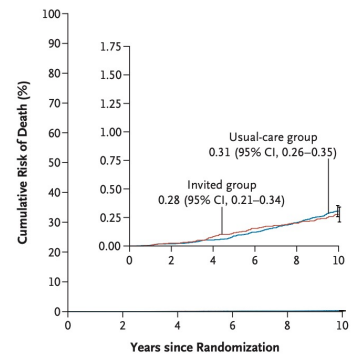
3 Länder (Norw, Pol, Swe)

84'843 persons

33-60% Teilnahme



No. at Risk	28,220	27,684	27,111	26,461	24,000	18,748
Invited group	28,220	27,684	27,111	26,461	24,000	18,748
Usual-care group	56,365	55,375	54,192	52,819	47,769	37,313



No. at Risk	28,220	27,768	27,224	26,591	25,273	18,856
Invited group	28,220	27,768	27,224	26,591	25,273	18,856
Usual-care group	56,365	55,469	54,362	53,086	50,356	37,604

Risk of CRC
20% weniger

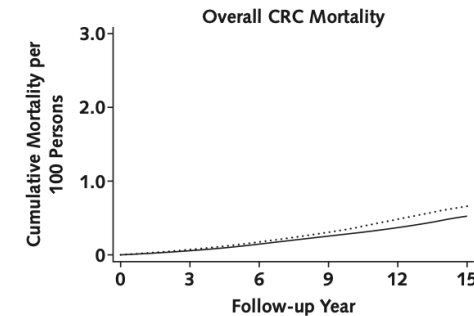
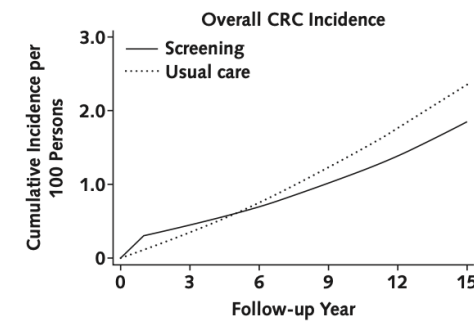
Risk of death (CRC)
10% weniger

Juul FE et al. Ann Intern Med 2022;175 **SIGMOIDOSCOPY**

4 Studien (Norw,UK,USA,Ita)

274 952 persons

70% Teilnahme



Risk of CRC
21% weniger

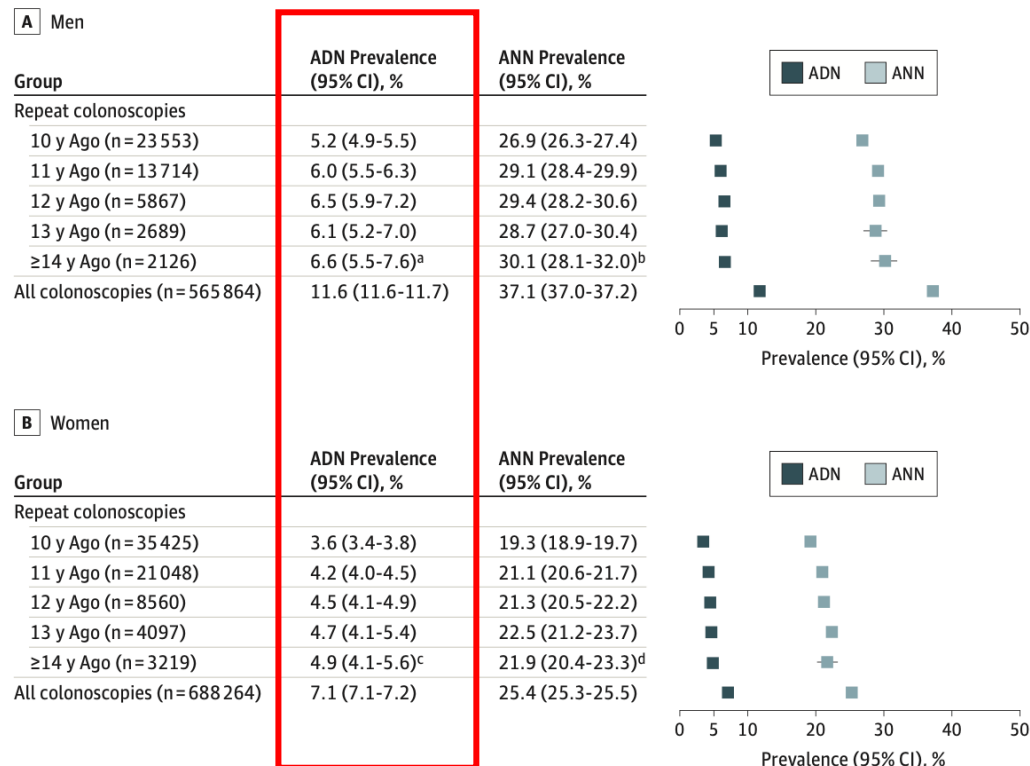
Risk of death (CRC)
20% weniger

Karzinome nach negativer Screening-Koloskopie

Brenner et al JAMA Intern Med. 2023;183(3):183-190 (D)

120 298 mit negativer Screening Koloskopie

Figure 1. Findings at Screening Colonoscopy During 2013 to 2019 in Repeated Screening Participants and Overall as Stratified by Individual Years Since Previous Colonoscopy



Vergleich mit zu erwartender Inzidenz:

CRC: nur 20%

Adv. Adenoma: nur 45%

Schlussfolgerung:

Nachkontrolle nach 10 Jahren ist ausreichend

Intervall-Karzinome / Post-Colonoscopy-CRC (PCCRC)

World Endoscopy Organization (WEO) consensus statement to classify PCCRCs:

Auftreten 6 Monate - 4 Jahre nach negativer Kolonoskopie

Leung et al. Gastroenterology 2023;164:470

533 PCCRC cases Kaiser Permanente Northern California

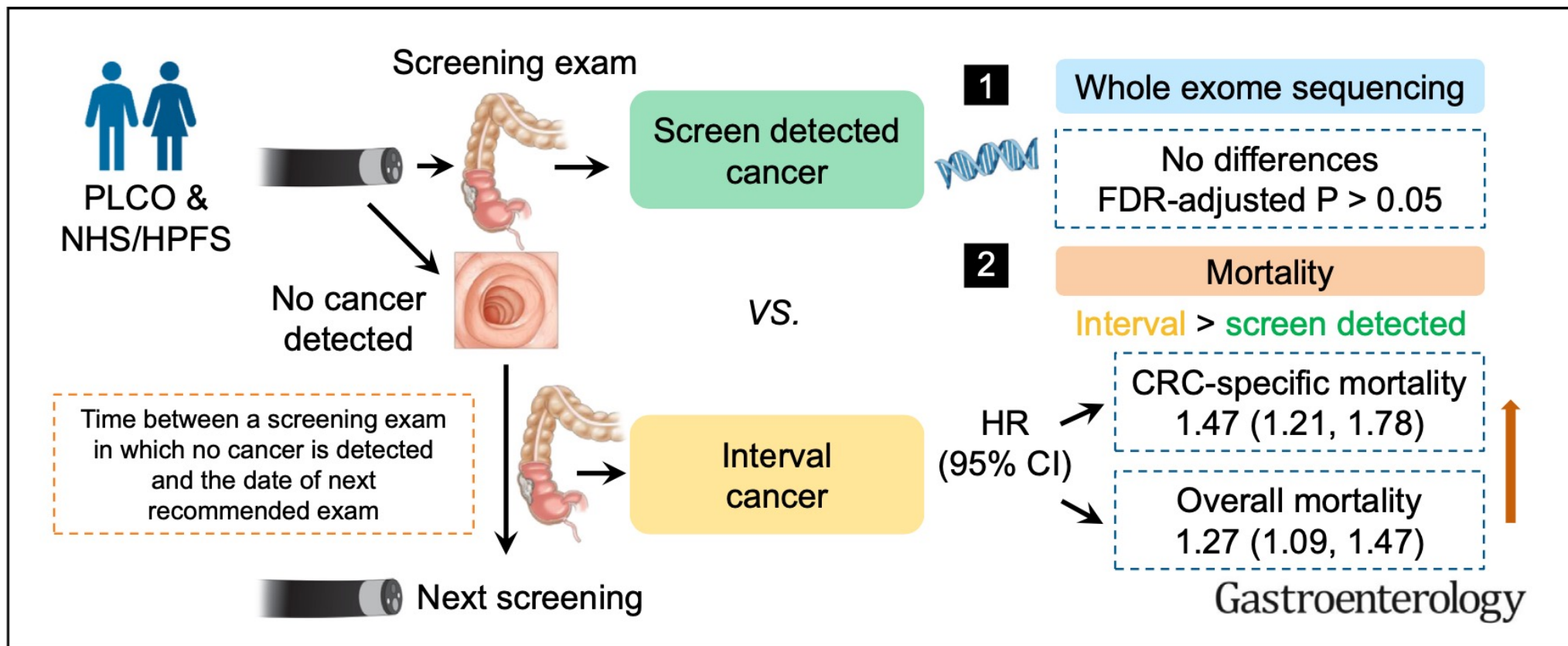
CRC diagnosis 6 months to 10 years after negative Screening Colonoscopy

40%: missed

Hohe Mortalität bei Intervall CRC

Yang et al. Gastroenterology 2022;163:1522–1530 (USA,China)

4836 Intervall-CRCs (NHS) (HPFS) (PLCO)



FIT: Intervall Karzinome

Breekveldt, Int. J. Cancer. 2023;152:1536 (NL)

2,3 Mio Personen

FOB-Gold, Sentinel Diagnostics, Milan, Italy

Cut-off <47ug Hb/g

FIT alle 2 Jahre

	Number			Incidence rate/10000	
	Population screened	IC	SDC	IC	SDC

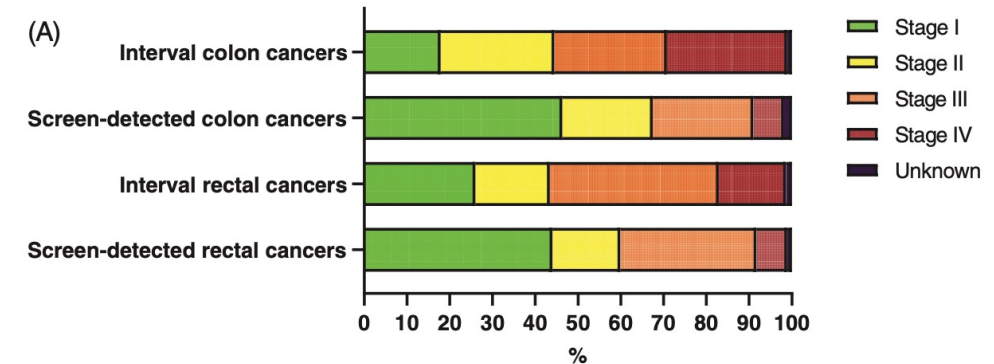
Round 1

Sex

Male	1 113 736	1178	7584	10.6	68.1
Female	1 188 975	1078	4599	9.1	38.7

d.h. FIT Sensitivität: 70-80%

CRC Stadien



Neues zum FIT: FIT vs. Kolonoskopie

Once-only colonoscopy or two rounds of faecal immunochemical testing 2 years apart for colorectal cancer screening (SCREESCO): preliminary report of a randomised controlled trial



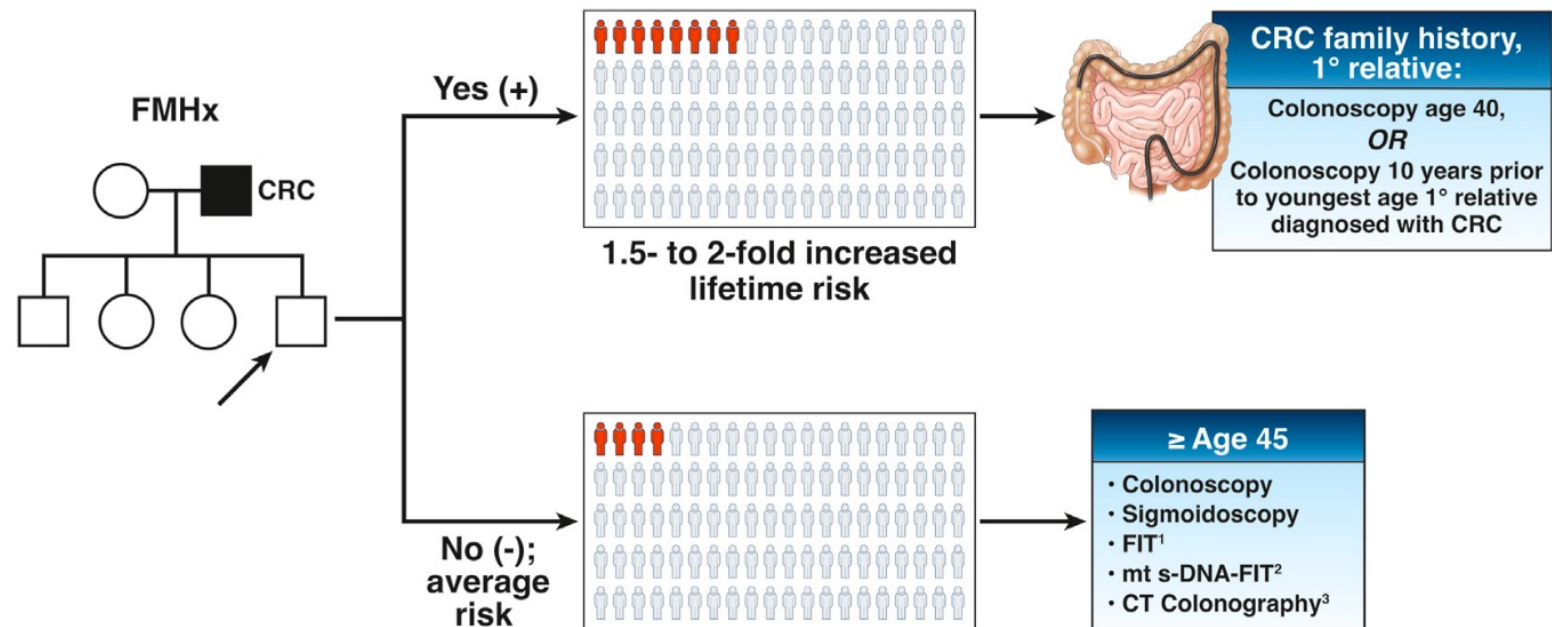
*Anna Forsberg, Marcus Westerberg, Chris Metcalfe, Robert Steele, Johannes Blom, Lars Engstrand, Kaisa Fritzell, Mikael Hellström, Lars-Åke Levin, Christian Löwbeer, Andreas Pischel, Ulf Strömberg, Sven Törnberg, Yvonne Wengström, Anders Ekblom, Lars Holmberg, Rolf Hultcrantz, on behalf of the SCREESCO investigators**

Colonoscopy participation: 35.1%	CRC: 0.16%	AA: 2.05%
FIT participation: 55.5%	CRC: 0.20%	AA: 1.61%

Ab welchem Alter Screening Start ?

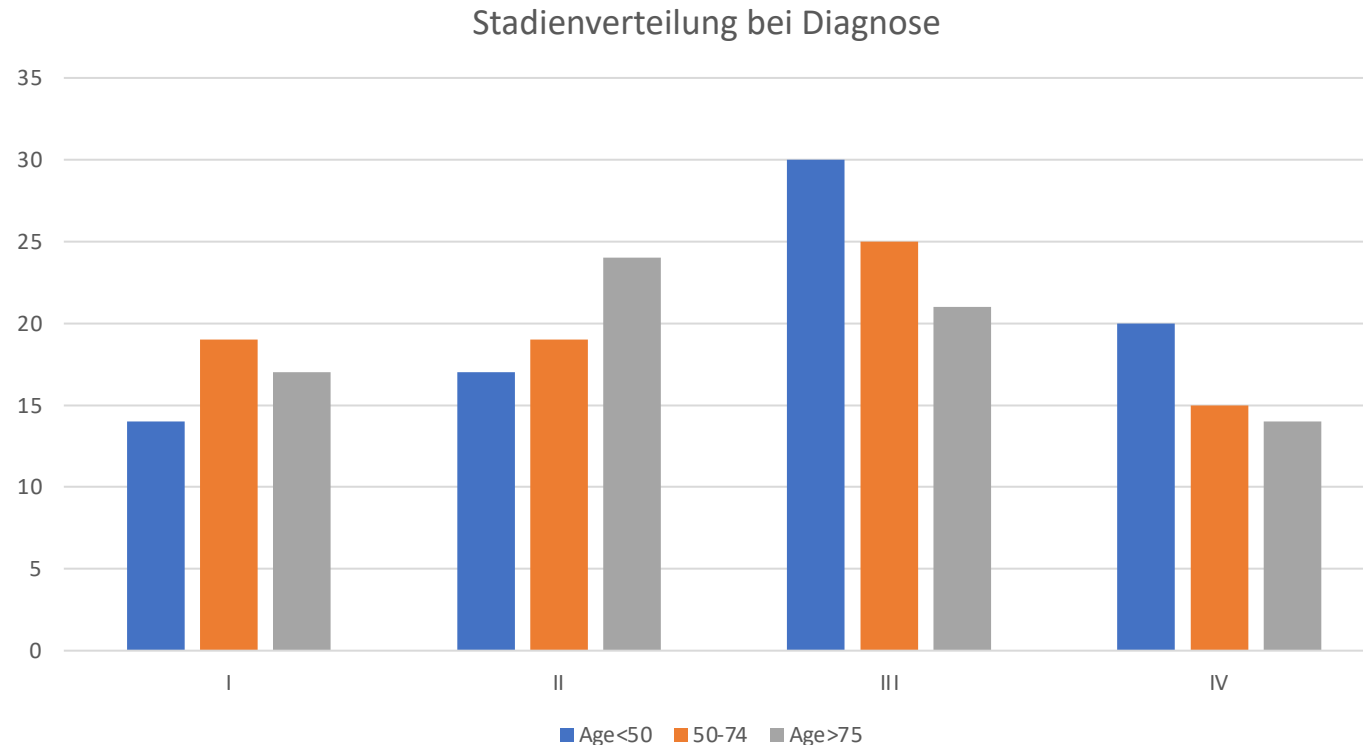


AGA Clinical Practice Update Colorectal Cancer Screening Gastroenterology 2023;165:1280–1291



CRC Epidemiologie: Junge haben höheres Stadium

Castelo et al. GE 2023 164:1152 (Can/Aus)



Wenig Unterschied im Verzug von Symptom -> Diagnose/Behandlung

Adenome beim jungen Patienten -> Risiko für CRC

Casey Am J Gastroenterol 2023;118:1656

54,284 Veteranen

Kolonoskopie <50 J

13% hatten eine Adenom (YOA)

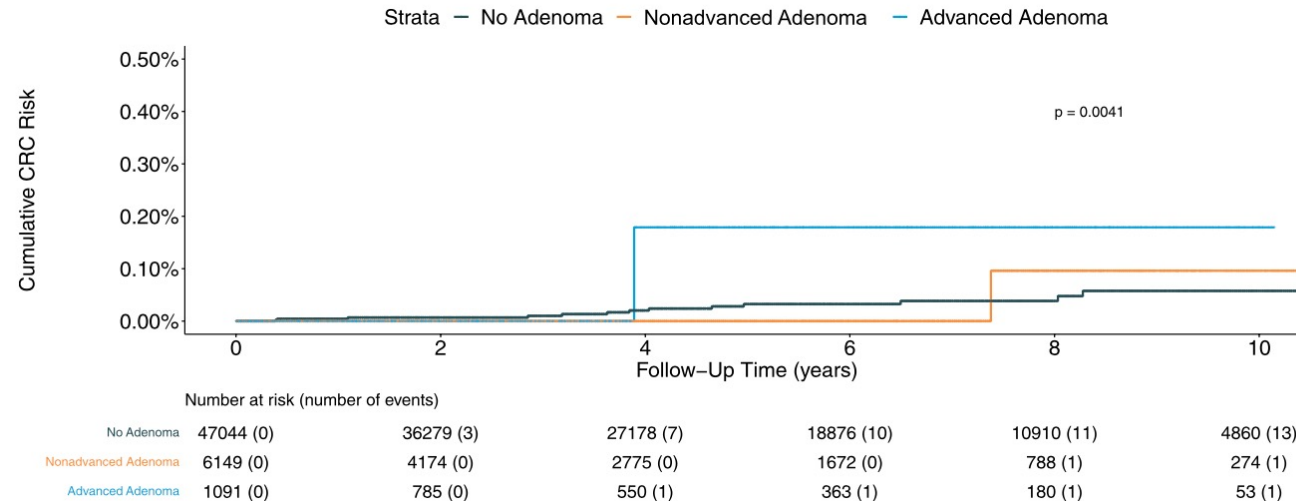
Cumulative 10-year CRC incidence:

0.11% after any adenoma diagnosis

0.18% after nonadvanced adenoma

0.06% after normal colonoscopy

hazard ratio: 8.0; 95% CI: 1.8–35.6



Hoffnung auf «Liquid Biopsy»

Zhou et al. *Molecular Cancer* (2022) 21:86
https://doi.org/10.1186/s12943-022-01556-2

Molecular Cancer

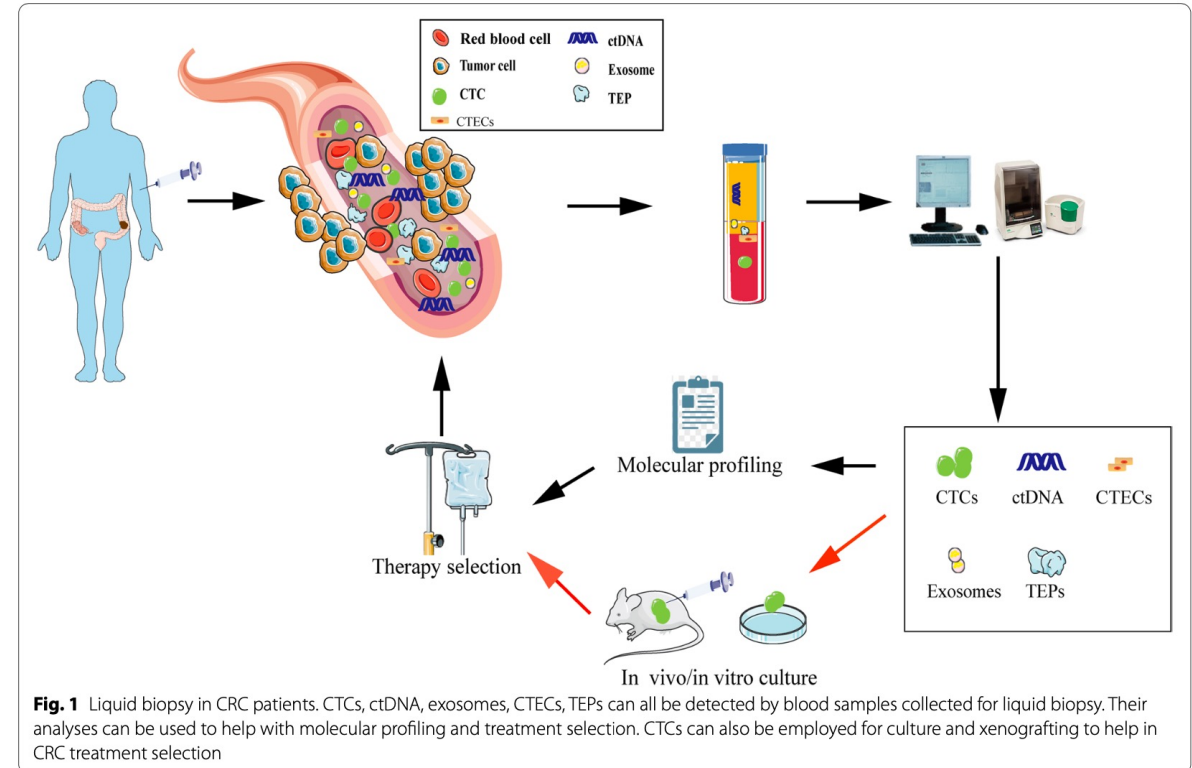
REVIEW

Open Access

Liquid biopsy at the frontier of detection, prognosis and progression monitoring in colorectal cancer

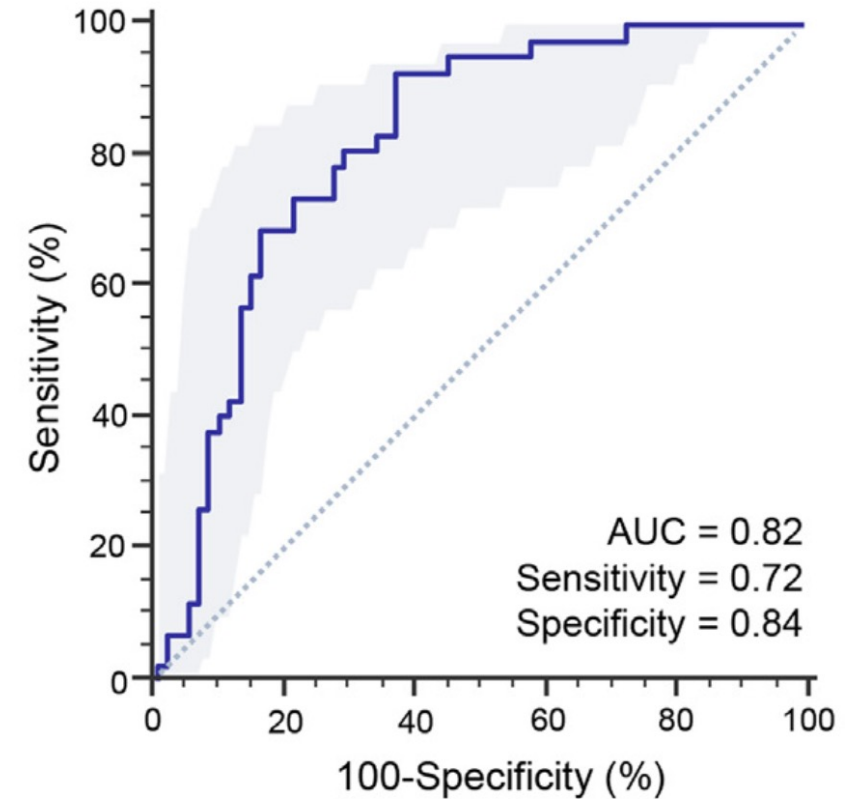
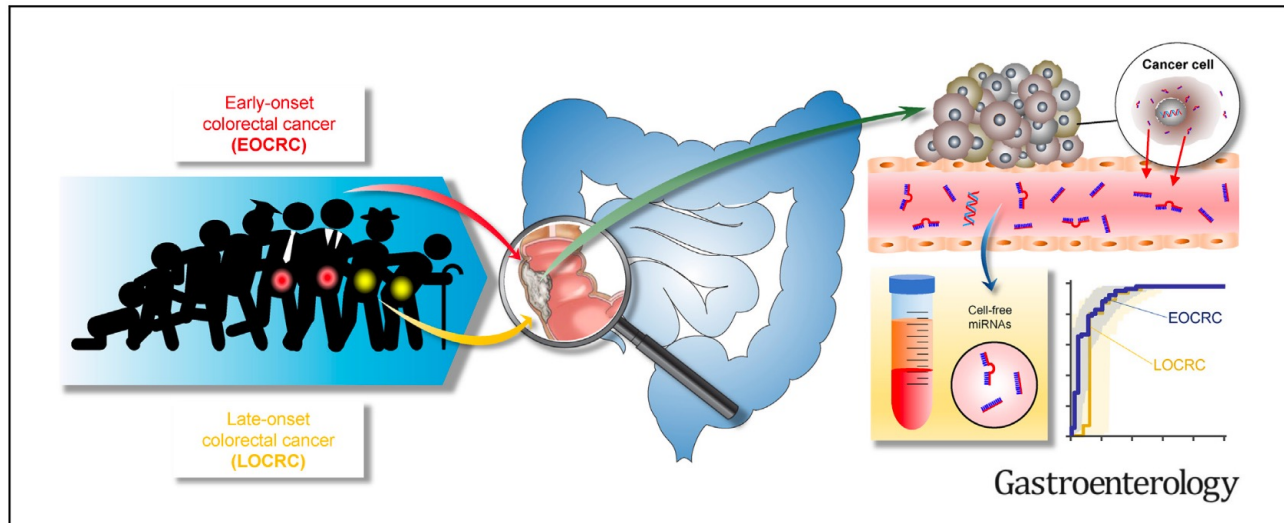
Hui Zhou^{1,2†}, Liyong Zhu^{1†}, Jun Song^{2†}, Guohui Wang¹, Pengzhou Li¹, Weizheng Li¹, Ping Luo¹, Xulong Sun¹, Jin Wu², Yunze Liu², Shaihong Zhu^{1*} and Yi Zhang^{2*}

- Statt FIT oder Endoskopie
- Früherkennung Intervall-CRC
- Früherkennung „early onset CRC“
- Steuerung Chemotherapie



Liquid Biopsy: Früherkennung von «Early-Onset Colorectal Cancer»

Nakamura et al. Gastroenterology 2022;163:1242–1251 (USA, E, J)



Hoffnung: Microbiom

Risikofaktor CRC

Risikofaktor “early onset CRC”

Risikofaktor “Interval CRC”

Therapeutischer Einsatz

Helicobacter pylori

Original research

Helicobacter pylori promotes colorectal carcinogenesis by deregulating intestinal immunity and inducing a mucus-degrading microbiota signature

Anna Ralser,¹ Alisa Dietl,¹ Sebastian Jarosch,^{1,2} Veronika Engelsberger,¹ Andreas Wanisch,¹ Klaus Peter Janssen ,³ Moritz Middelhoff,⁴ Michael Vieth,⁵ Michael Quante ,^{4,6} Dirk Haller ,^{7,8} Dirk H Busch,^{1,9} Li Deng,^{10,11} Raquel Mejías-Luque ,^{1,9} Markus Gerhard ,^{1,9}

Gut microbiome



OPEN ACCESS

Original research

Cigarette smoke promotes colorectal cancer through modulation of gut microbiota and related metabolites

Xiaowu Bai,^{1,2} Hong Wei,³ Weixin Liu,¹ Olabisi Oluwabukola Coker,¹ Hongyan Gou,¹ Changan Liu,¹ Liuyang Zhao,¹ Chuangen Li,¹ Yunfei Zhou,¹ Guoping Wang,¹ Wei Kang ,⁴ Enders Kwok-wai Ng,² Jun Yu ,¹

Highlights 2023

Wie werden wir besser? AI?

AI verbessert die Polypenentdeckung ADR

Karsenti Lancet 2023; 8:726 (F): **GI Genius: ADR 37.5% vs. 33.7% (sig.)**

Lui GIE 2023;97:325 (Sing): **CADe (Tandem-Studie): ADR 44.7% vs. 34.6% (sig.)**
proximal adenoma miss rate: 20.0% vs 14.0% (n.sig.)

CADe gut für:

- endoscopists with lower ADRs
- shorter withdrawal times
- patients with fair bowel preparation

AI & Endocuff noch besser ?

Ahmad Endoscopy 2023; 55:313 (UK):

CADe&Endocuff vs. Endocuff
ADR 71.4% vs. 65.0% (n. sig.)

Spadaccini GE 2023;165:244 (Ita&):

CADe& Endocuff vs.CADe
49.6% vs. 44.0% (sig.)

Pattarajierapan Surg Endo 2023;37 (Thai):

TXI & Endocuff vs. TXI
ADR 65.6% vs. 52.1% (sig.)

..die Frage ist:
ist der Endocuff nicht wichtiger als der GI Genius?

AI: Endoskopische Diagnose von Polypen (CADx)

- Ersetzt die teure Pathologie
- Entscheidung Polyp wegwerfen (resect and discard)
- Entscheidung Polyp drin lassen (leaving in situ)

Optical Diagnosis: Resect and Discard

Ahmad GIE 2022;96:1021 (Discard III UK Gr)

525 patients

1560 <10-mm polyps → NICE Kriterien

28 Endoskopiker

Accurate: 81.5% of 5-mm
92.8% of 6-9-mm

Surveillance interval concordance (5 mm):

91.3% (209/229) for U.S. Multi-Society Task Force

98.3% (225/229) for European Society of Gastrointestinal Endoscopy

98.7% (226/229) for British Society of Gastroenterology

AI: CADx Dutch POLAR System

Endoscopy 2023

Original article

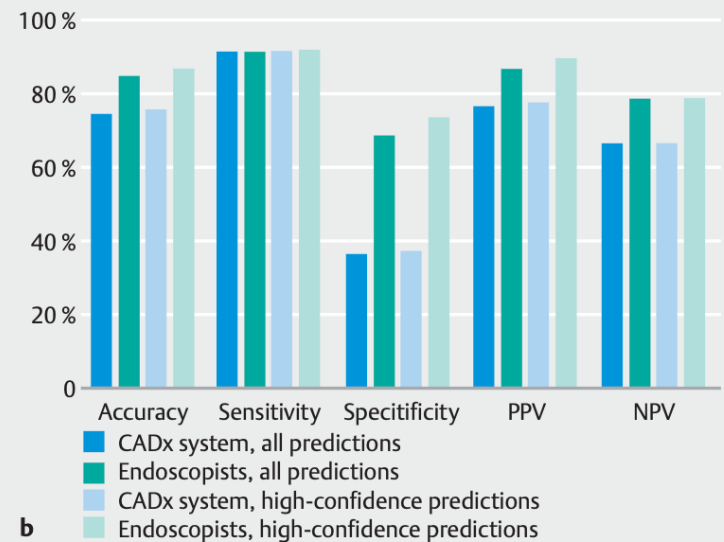
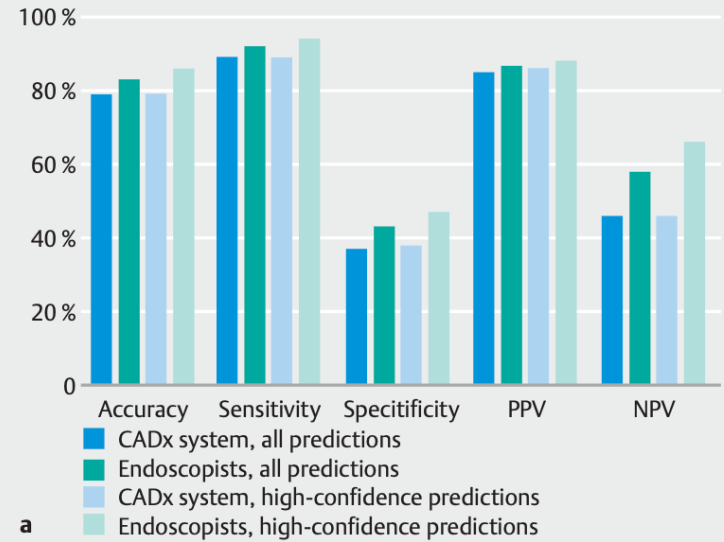
 Thieme

Computer-aided diagnosis for optical diagnosis of diminutive colorectal polyps including sessile serrated lesions: a real-time comparison with screening endoscopists ▶




Authors

Britt B. S. L. Houwen¹ , Yark Hazewinkel², Ioannis Giotis³, Jasper L. A. Vleugels¹, Nahid S. Mostafavi⁴, Paul van Putten⁵, Paul Fockens¹, Evelien Dekker^{1,6} , POLAR Study Group



AI: CADx Fujinon CAT-EYE System

Original article

Thieme

Artificial intelligence-assisted optical diagnosis for the resect-and-discard strategy in clinical practice: the Artificial intelligence BLI Characterization (ABC) study

Authors
Emanuele Rondonotti^{1,*}, Cesare Hassan^{2,*}, Giacomo Tamanini¹, Giulio Antonelli^{2,3}, Gianluca Andrisani⁴, Giovanni Leonetti^{2,5}, Silvia Paggi¹, Arnaldo Amato¹, Giulia Scardino¹, Dhanai Di Paolo^{1,6}, Giovanna Mandelli¹, Nicoletta Lenoci¹, Natalia Terreni¹, Alida Andrealli¹, Roberta Maselli^{7,8}, Marco Spadaccini^{7,8}, Piera Alessia Galtieri⁹, Loredana Correale², Alessandro Repici^{7,8}, Francesco Maria Di Matteo⁴, Luciana Ambrosiani⁹, Emanuela Filippi⁹, Prateek Sharma^{10,11}, Franco Radaelli¹

Endoscopy 2023

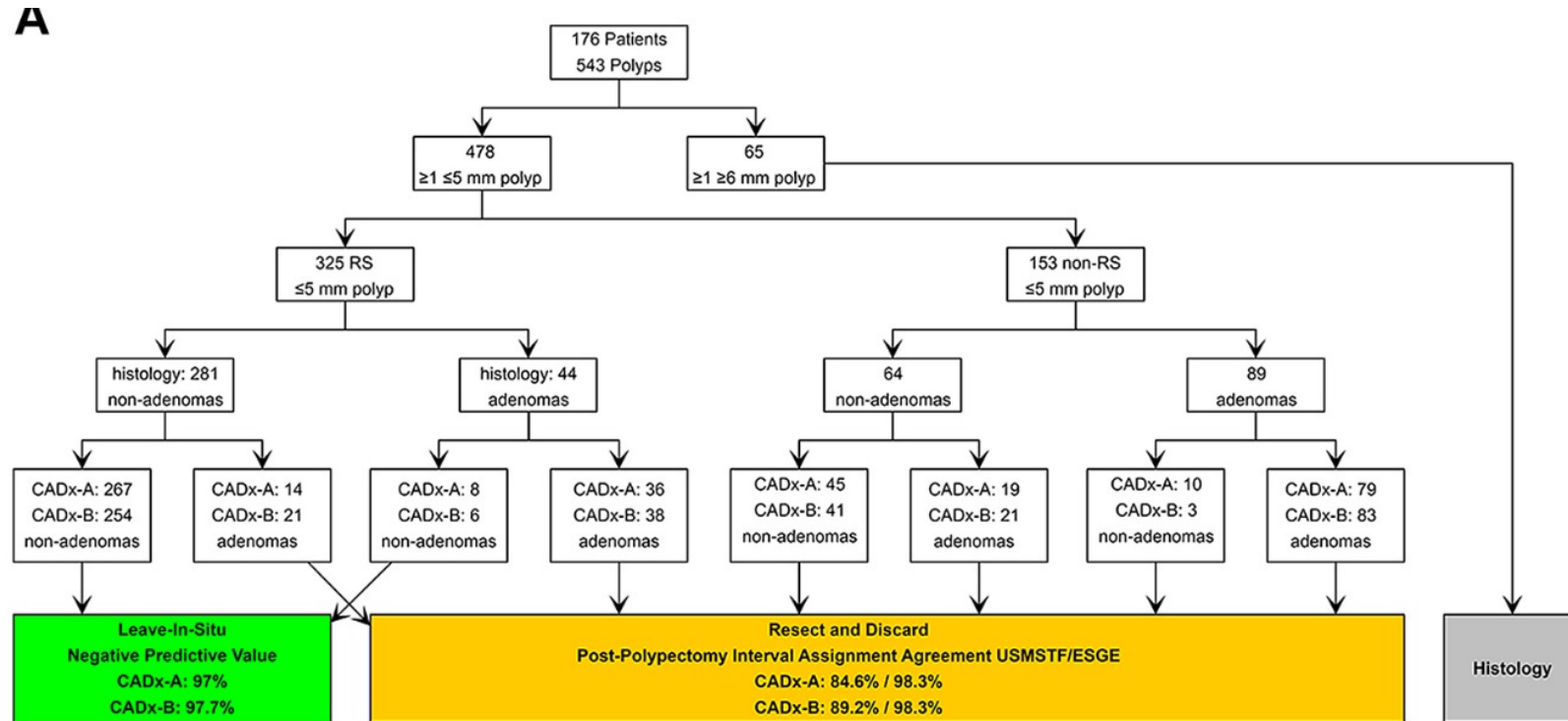
► **Table 4** Accuracy parameters (95 %CIs) for optical diagnosis of diminutive rectosigmoid polyps in step one (endoscopist-alone optical diagnosis) and step three (AI-assisted optical diagnosis) of the optical diagnosis process, according to endoscopist expertise in optical diagnosis.

	Expert endoscopists ¹		Nonexpert endoscopists ²	
	Endoscopist-alone optical diagnosis (step one)	AI-assisted optical diagnosis (step three)	Endoscopist-alone optical diagnosis (step one)	AI-assisted optical diagnosis (step three)
Sensitivity	90.6 (84.4–94.5)	90.1 (83.8–94.1)	81.8 (71.8–88.9)	86.2 (76.7–92.3)
Specificity	92.1 (87.0–95.3)	93.3 (88.6–96.2)	83.3 (74.9–89.4)	79.5 (70.8–86.1)
PPV	90.0 (83.7–94.1)	91.3 (85.2–95.0)	79.1 (69.0–86.6)	75.7 (65.9–83.5)
NPV	92.5 (87.5–95.7)	92.4 (87.5–95.5)	85.6 (77.3–91.2)	88.6 (80.5–93.6)
Accuracy	91.4 (87.9–94.1)	91.9 (88.5–94.5)	82.7 (76.7–87.6)	82.3 (76.4–87.3)

AI, artificial intelligence; PPV, positive predictive value; NPV, negative predictive value.
¹ No significant differences were found on comparison of each accuracy parameter for optical diagnosis step one vs. step three among the expert endoscopists (*P*> 0.05 for all comparisons).
² Trends toward increased sensitivity and negative predictive value were observed when comparing step one to step three among nonexpert endoscopists (*P*= 0.053 and *P*= 0.058, respectively).

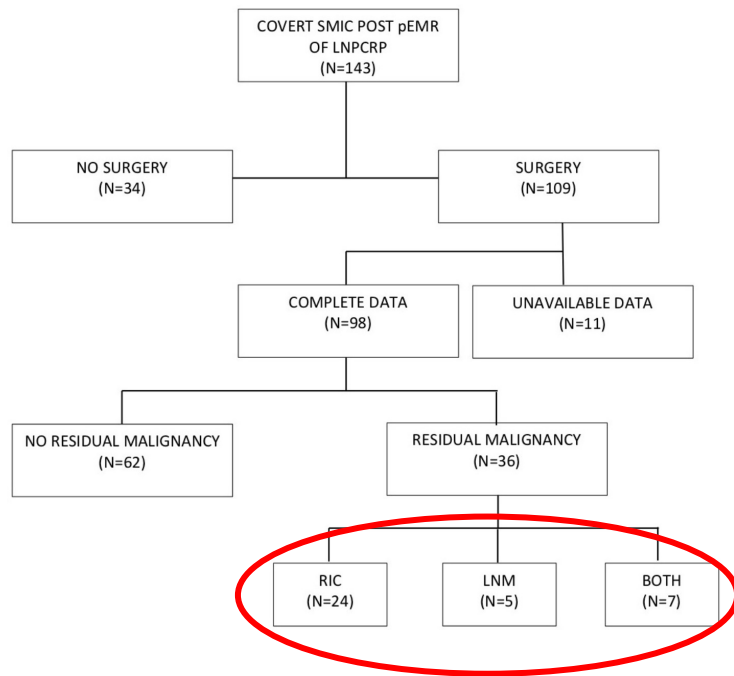
AI: CADx für «Leaving in Situ Colorectal Polyps»

Hassan Gastroenterology 2023;164:467–469



Colonkarzinom im Resektat einer Piecemeal Resektion

Gibson DJ, et al. Gut 2022;71:2481 (AUS)



Final oncological staging	All cases (n=98)
Stage 1	81
T1N0	72
T2N0	9
Stage 2	5
T3N0	5
T4N0	0
Stage 3	12
T1N1	9
T2N1	1
T3N1	0
T3N2	2
Stage 4	0
Any T Any N M1	

3 yrs f/u:
No metas
No CRC

Colonkarzinom im Resektat einer Piecemeal Resektion

Gibson DJ, et al. Gut 2022;71:2481 (AUS)

Supplementary Table 2. Endoscopic and pathological variables in patients with Lymph Node Metastases (LNM) within surgical specimen

ENDOSCOPIC AND PATHOLOGIC VARIABLES	LNM (N=12)	NO LNM (N=86)	p value
LOCATION			
Distal (n=59)	8	51	0.76
Proximal (n=39)	4	35	
SUBMUCOSAL FIBROSIS			
Present (n=53)	5	48	0.37
Absent (n=45)	7	38	
EXTENT OF INVASION			
Unifocal (n=53)	4	49	0.21
Multifocal (n=45)	8	37	
DEPTH OF SM INVASION			
SM1 (n=17)	2	15	0.31
SM2 (n=50)	4	46	
SM3 (n=31)	6	25	
DEPTH OF SM INVASION			
SM1 (n=17)	2	15	0.99
SM2/SM3 (n=81)	10	71	
DEPTH OF SM INVASION			
1-1000 (n=15)	0	15	0.27
1001-2000 (n=25)	2	23	
2001-3000 (n=27)	5	22	
>3000 (n=31)	5	26	
DEPTH OF SM INVASION			
<2000 (n=40)	2	38	0.11
>2000 (n=58)	10	48	
DEEP MARGIN			
Clear (n=43)	1	42	0.01
Involved (n=52)	11	41	
Not assessable (n=3)		3	
TUMOUR DIFF			
Well/Mod (n=76)	3	73	<0.0001
Poor (n=22)	9	13	
LVI			
Present (n=21)	10	11	<0.0001
Absent (n=77)	2	75	
TUMOUR BUDDING			
Present (n=38)	8	30	0.055
Absent (n=60)	4	56	

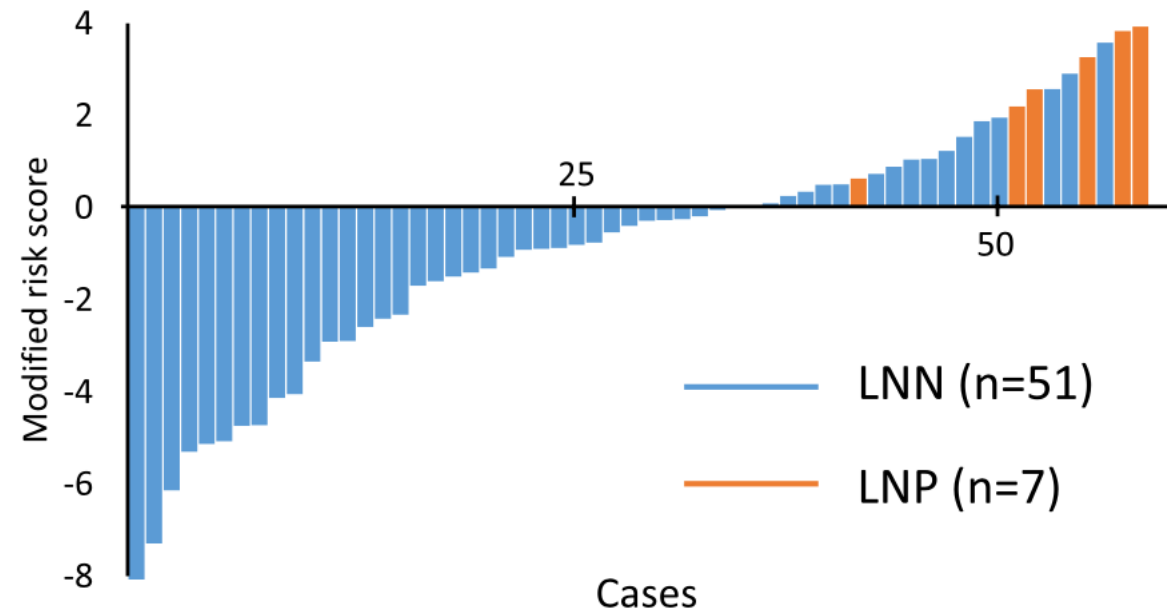
Alle Pat mit LNM: entweder >G2 oder/und LVI (12/33)

Alle Pat ohne LNM: weder LVI noch >G2 (0/55)

Liquid Biopsy: Auffinden von T1 mit LK-Metastasen

Myazaki Mol Cancer 2023 22:2 (Jp, IPF 41:44)

Analyse von exosomalen micro RNA und cell free micro RNA
200 Patienten mit CRC
Serum präoperativ



Highlights 2023

Rektumkarzinom

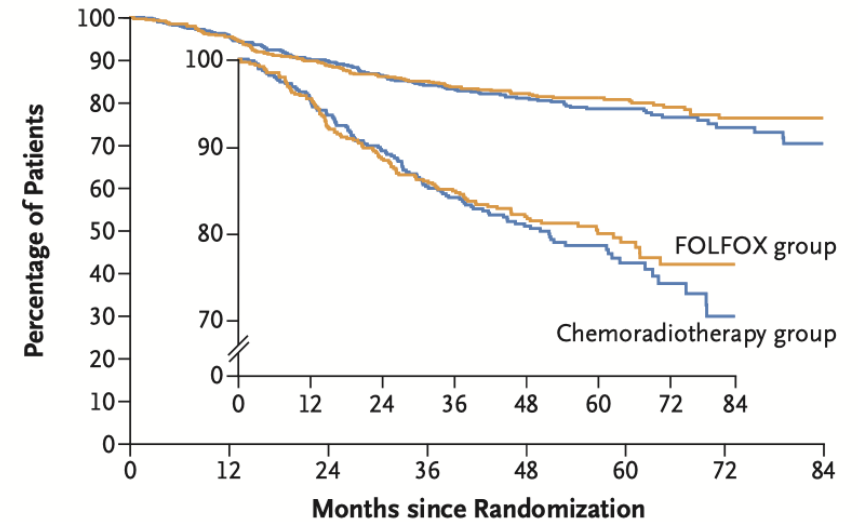
Neues zum Rektumkarzinom: Radiotherapie weglassen?

Schrag et al. N Engl J Med 2023;389:322-34

1194 Patienten: cT2N+, cT3N-, cT3N+

Randomisiert: FOLFOX vs. FOLFOX&RT

B Disease-free Survival



No. at Risk
FOLFOX group

	585	543	489	443	342	200	97	42
Chemoradiotherapy group	543	500	456	395	295	181	80	37
	No. of Events/ Total No.	Hazard Ratio (90.2% CI)		5-Year Estimate percent		Stratified P Value for NI		
Chemoradiotherapy group	114/585	0.92 (0.74–1.14)		80.8 (77.9–83.7)		0.005		
FOLFOX group	113/543	Reference		78.6 (75.4–81.8)		—		

Pathological tumor stage after neoadjuvant therapy — no./total no. (%)

ypT0	121/534 (22.7)	125/506 (24.7)
ypT1	56/534 (10.5)	50/506 (9.9)
ypT2	183/534 (34.3)	156/506 (30.8)
ypT3	169/534 (31.6)	173/506 (34.2)
ypT4	5/534 (0.9)	2/506 (0.4)

Pathological node status after neoadjuvant therapy — no. (%)

ypN0	400 (74.8)	390 (76.5)
ypN1	108 (20.2)	104 (20.4)
ypN2	27 (5.0)	16 (3.1)

complete response: in beiden Gruppen 25 %

Neues zum Rektumkarzinom: RCT...wait and watch

Gerard Lancet Gastroenterol Hepatol 2023; 8: 356–67 OPERA study (Fr)

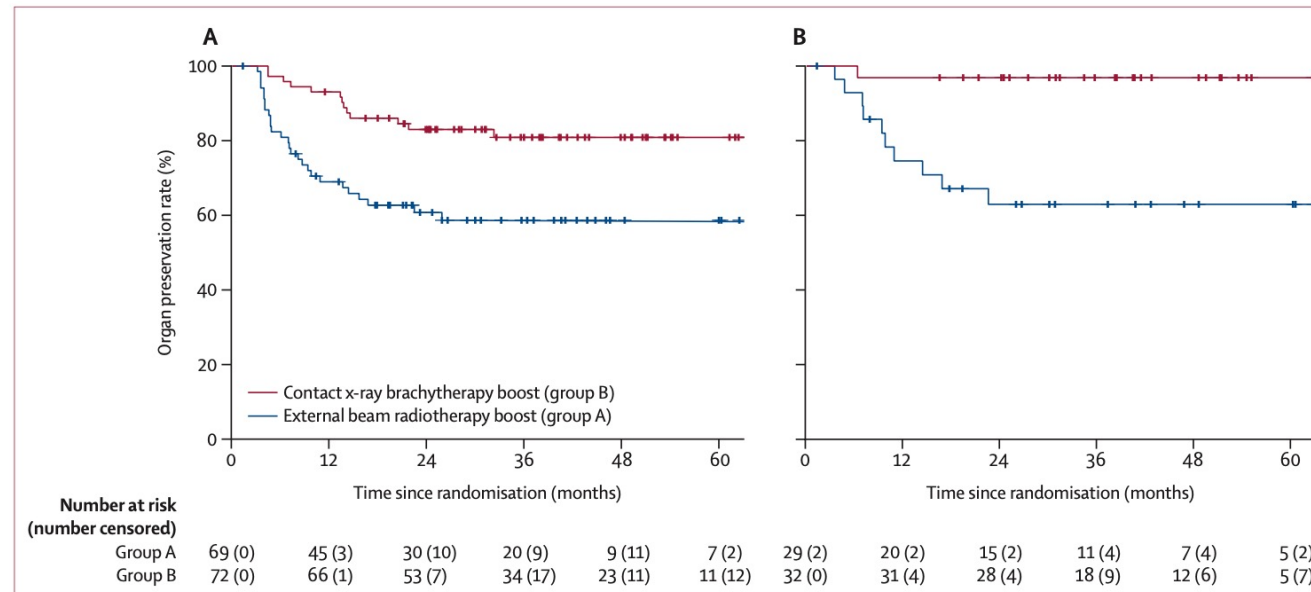
148 Patienten mit cT2-cT3 Rektumkarzinom

45 Gy external beam radiotherapy & capecitabine (825 mg/m² twice a day)

Randomisiert:

boost of external beam radiotherapy at 9 Gy in five fractions (group A)

contact x-ray brachytherapy (90 Gy in three fractions) (group B)



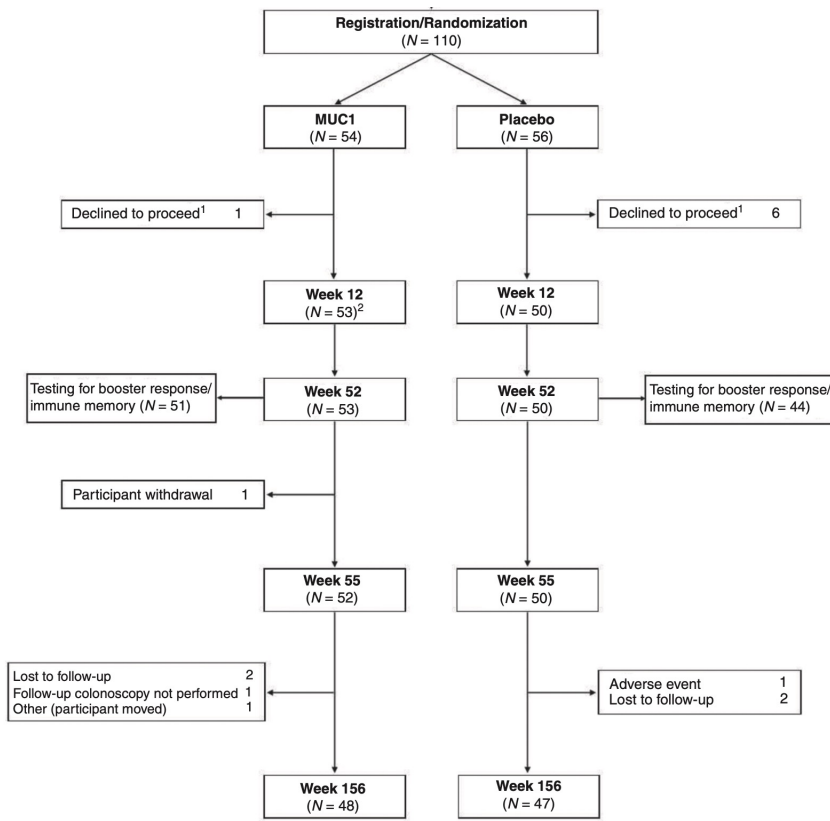
Highlights 2023

Zukunft

Anti-Adenoma Impfung

Schoen et al. Clin Cancer Res 2023;XX:XX–X (Imp Fact 14)

Columbia Unvisitym, NY



Recurrent adenoma(s)	N with recurrent adenoma/total N (%)
Any adenoma	
Placebo (reference)	31/47 (66.0%)
MUC1	27/48 (56.3%)
Immune responder ^c	3/11 (27.3%)
Advanced adenoma, in different location from baseline ^d	
Placebo (reference)	3/47 (6.4%)
MUC1	1/48 (2.1%)
Immune responder ^c	0/11 (0.0%)

Highlights 2023

Danke !