Screening e Ricerca

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IRCCS AOU BOLOGNA

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Conflict of interest

- None

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Colorectal Cancer Screening

- Target population (50-69) followed longitudinally
- Collecting data (and possibly samples) prospectively from thousands of patients on
  - Procedures
  - Subject characteristics
  - Findings
    - Cancers
    - Polyps
    - Others…

Huge source of data, samples → the ideal platform for research

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CRC screening as a platform for research

- Epidemiological data/risk factors → policy makers; adoption of new strategies
- Quality in endoscopy → screening colonoscopy setting best standards for endoscopy
- Understanding the natural history of polyps and cancer
- Developing new strategies for CRC screening
- Understanding risk factors leading to polyps and cancers
- Molecular determinants in sporadic CRC vs hereditary
- New technological developments in endoscopy and imaging

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Faecal haemoglobin concentration among subjects with negative FIT results is associated with the detection rate of neoplasia at subsequent rounds

Table 2 Predictors of the DR of CRC, advanced adenoma and AN at the third FIT

		CRC		Advanced adenoma		AN	
		OR	95% CI	OR	95% CI	OR	95% CI
Gender	Women	1		1		1	
	Men	1.34	1.00 to 1.79	1.63	1.46 to 1.83	1.60	1.43 to 1.78
Age (years)	50–54	0.54	0.32 to 0.91	0.67	0.55 to 0.82	0.65	0.55 to 0.79
	55–59	0.75	0.47 to 1.17	1.02	0.86 to 1.22	0.98	0.83 to 1.15
	60–64	0.95	0.67 to 1.36	1.00	0.86 to 1.16	0.99	0.87 to 1.14
	65–69	1		1		1	
Interval since last fit (months)	18–22	0.67	0.30 to 1.49	0.80	0.59 to 1.08	0.78	0.58 to 1.03
	23–27	1		1		1	
	28–32	0.92	0.61 to 1.37	0.98	0.83 to 1.16	0.97	0.83 to 1.13
	33–36	0.96	0.39 to 2.40	1.23	0.86 to 1.77	1.19	0.85 to 1.67
	37–60	1.10	0.51 to 2.36	1.49	1.14 to 2.00	1.44	1.11 to 1.87
Cumulative f-Hb level at previous 2 FIT tests (FIT1 + FIT2) µg Hb/g faeces	0	1		1		1	
	0.1–3.9	2.26	1.47 to 3.46	1.75	1.47 to 2.07	1.81	1.55 to 2.12
	4–9.9	4.01	2.51 to 6.39	4.64	3.93 to 5.49	4.58	3.91 to 5.36
	10–14.9	10.11	6.04 to 16.93	9.13	7.48 to 11.15	9.32	7.73 to 11.23
	15–19.9	11.63	6.42 to 21.07	12.84	10.32 to 16.00	12.42	10.43 to 15.76
	≥20	38.92	22.50 to 67.31	30.40	24.09 to 38.38	32.52	26.19 to 40.39

AN, advanced neoplasia; CRC, colorectal cancer; DR, detection rate; FIT, faecal immunochemical test.

Senore et al. Gut. 2020 Mar;69(3):523-530.

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Personalized colorectal cancer screening: study protocol of a mixed-methods study on the effectiveness of tailored intervals based on prior f-Hb concentration in a fit-based colorectal cancer screening program (PERFECT-FIT)

Table 1 Risk of AN and/or CRC in subsequent screening rounds in high-risk individuals compared to low-risk individuals

Program	FIT cut-off	Comparison high- vs. low-risk individuals	Main outcome	Risk of AN and/or CRC in subsequent round
Dutch pilot studies [14]	10 µg Hb/g feces	8–10 µg Hb/g feces vs. 0 µg Hb/g feces	AN	Hazard ratio: 8
Flemish CRC screening program[15]	15 µg Hb/g feces	Males aged 74 and 200 µg Hb/g feces vs. females aged 56 and 15 µg Hb/g feces	CRC	Odds ratio: 15
Dutch CRC screening program[16]	47 µg Hb/g feces	15–46.9 µg Hb/g feces vs. 0 µg Hb/g feces	AN	Odds ratio: 23
Scottish CRC screening program[17]	80 µg Hb/g feces	60.0–79.9 µg Hb/g feces vs. 0.0–19.9 µg Hb/g feces	AN	Odds ratio: 38

CRC colorectal cancer, *FIT* fecal immunochemical testing, *µg Hb/g* microgram hemoglobin per gram, *AN* advanced neoplasia

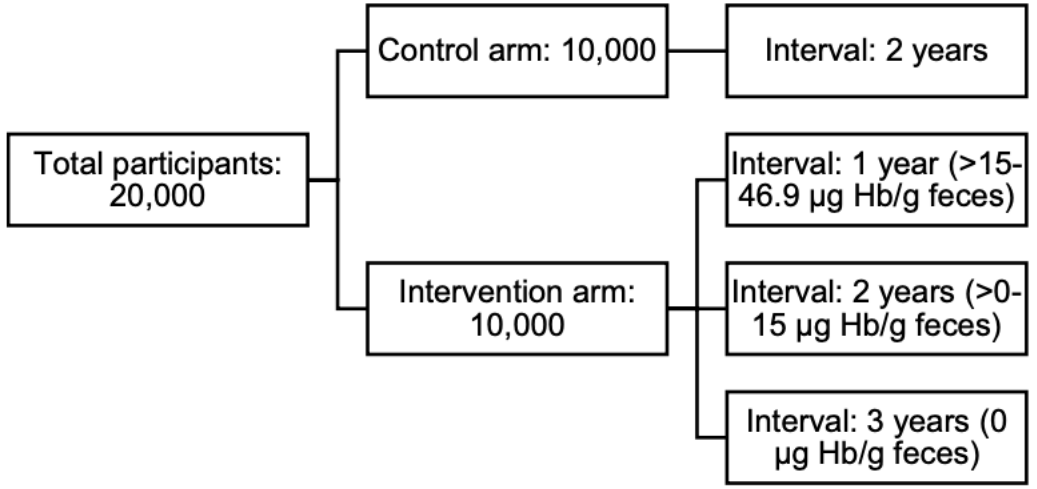

Fig. 2 Randomization of participants in the RCT. *µg Hb/g* microgram hemoglobin per gram, *RCT* randomized controlled trial

Breekveldt et al. BMC Gastroenterology (2023) 23:45

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Lifestyle factors and risk for colorectal polyps and cancer at index colonoscopy in a FIT-positive screening population

	NO LESIONS ($n=1751$)	HIGH-RISK ADENOMAS ($n=1349$)	
	n (%)	*n* (%)	OR (95% CI)
BMI			
Underweight	12 (0.7)	6 (0.4)	0.74 (0.27–2.02)
Normoweight	738 (42.2)	547(35.1)	1.0
Overweight	694 (39.7)	597 (44.3)	1.18 (1.0–1.39)
Obesity	306 (17.5)	272 (20.2)	1.29 (1.05–1.60)
Ever smoking			
No	1300 (74.2)	905 (67.1)	1.0
Yes	451 (25.8)	444 (32.9)	1.45 (1.24–1.71)

	NO LESIONS ($n=1751$)	CRC ($n=224$)		COLON CANCER ($n=174$)		RECTAL CANCER ($n=49$)	
	n (%)	*n* (%)	OR (95% CI)	*n* (%)	OR (95% CI)	*n* (%)	OR (95% CI)
BMI							
Underweight	12 (0.7)	1 (0.4)	0.57 (0.07–4.60)	1 (0.6)	0.81 (0.1–6.51)	0	–
Normoweight	738 (42.2)	89 (39.7)	1.0	61 (35.1)	1.0	27 (55.1)	1.0
Overweight	694 (39.7)	85 (37.9)	0.89 (0.64–1.24)	67 (38.5)	1.03 (0.71–1.49)	18 (36.7)	0.62 (0.33–1.15)
Obesity	306 (17.5)	49 (21.9)	1.14 (0.77–1.68)	45 (25.9)	1.50 (0.98–2.29)	4 (8.2)	0.33 (0.11–0.96)
Ever smoking							
No	1300 (74.2)	148 (66.1)	1.0	116 (66.7)	1.0	31 (65.3)	1.0
Yes	451 (25.8)	76 (33.9)	1.5 (1.10–2.04.)	58 (33.3)	1.43 (1.01–2.02)	17 (34.7)	1.58 (0.86–2.90)
Alcohol							
No	1717 (98.1)	211 (94.2)	1.0	161 (92.5)	1.0	49 (100)	1.0
Yes	34 (1.9)	13 (5.8)	2.29 (1.15–4.58)	13 (7.5)	3.09 (1.53–6.23)	0	–

(continued)

Colussi et al UEG J. 2018 Jul;6(6):935-942.

DARE | Digital Lifelong Prevention

Iniziativa PNC0000002 - "DARE - Digital Lifelong Prevention"

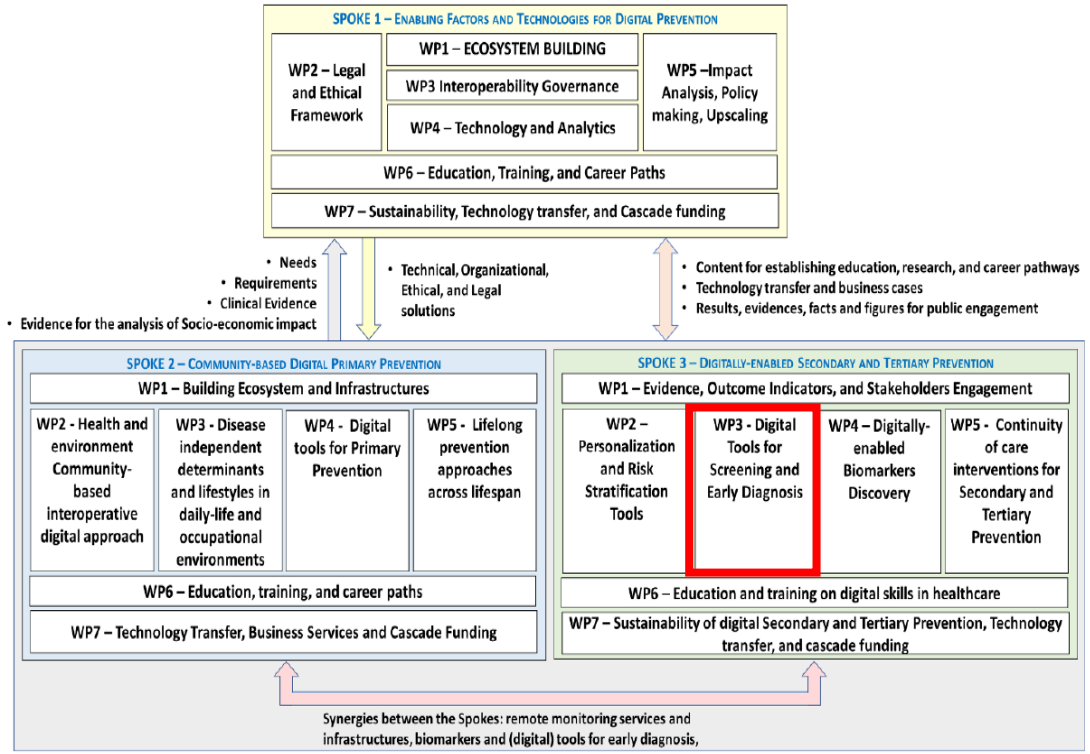
A digital health initiative to enable prevention along the life span

Generating AI-risk stratification strategies for improved colorectal cancer screening

Scope: Personalizing colorectal cancer screening and surveillance

Population of interest: *colorectal cancer screening*

Relevance for secondary/tertiary prevention and connection with digital health: *secondary prevention*



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AIM of the study

- Develop risk-based predictors, and tailor procedures to individuals' risk profile, offering more intensive screening to high-risk patients, to detect precancerous lesions and early cancers, while reducing the burden by offering less intensive screening to low-risk subjects.
- Providing precise and personalized strategy for screening and early detection through the biomarker assessment integrated with risk-based model tested in large scale populations.

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Impact of SARS-CoV-2 pandemic on colorectal cancer screening delay: effect on stage shift and increased mortality

A procedural model considering delays in the time to colonoscopy and estimating the effect on mortality due to up-stage migration of patients → The number of expected CRC cases computed by using the data of the **Osservatorio Nazionale Screening**. Estimates of the effects of delay to colonoscopy on CRC stage, and of stage on mortality assessed by a meta-analytic approach.

Prevalence (and corresponding expected number of CRC) of early and advanced stages for colorectal cancers detected at delayed screening, according to increasing time delays to the access to colonoscopy (estimates by the "DS" meta-analysis).

Diagnostic delay (mo.)	Stage at diagnosis	Stage Prevalence	95% CI#	Expected CRC$	p-value&
0-3	I-II	0.74	(0.69 – 0.80)	2356	Ref.
	III-IV	0.26	(0.20 – 0.31)	828	
4-6	I-II	0.76	(0.71 – 0.81)	2420	0.068
	III-IV	0.24	(0.19 – 0.29)	764	
7-12	I-II	0.71	(0.66 – 0.77)	2261	0.008
	III-IV	0.29	(0.23 – 0.34)	923	
>12	I-II	0.67	(0.57 – 0,77)	2133	<0.001
	III-IV	0.33	(0.23 – 0.43)	1051	

Expected number of deaths at 5-years for colorectal cancer detected at delayed screening, according to diagnostic delays and stage at diagnosis.

Diagnostic delay (mo.)	Stage at diagnosis	Expected Deaths$	Relative change (%)		All stages		
				p-value&	Expected deaths$	Relative change (%)	p-value&
0-3	I-II	353	Ref.	--	858	Ref.	--
	III-IV	505					
4-6	I-II	363	2.8	0.294	829	-3.4	0.427
	III-IV	466	-7.7				
7-12	I-II	339	-4.0	0.139	902	5.1	0.228
	III-IV	563	11.5				
>12	I-II	320	-9.3	<0.001	961	12.0	0.005
	III-IV	641	26.9				

Ricciardiello et al. Clinical Gastroenterology and Hepatology 2021

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Modelling optimal use of temporarily restricted colonoscopy capacity in a FIT-based CRC screening program: Application during the COVID-19 pandemic

Table 1. The efficiency of strategies to reduce colonoscopy demand predicted by MISCAN-Colon.

	Reduction in colonoscopy demand in 2020, 2021 and 2022 (%)	Excess CRC incidence (2020–2050, %)	Increase in CRC incidence per colonoscopy not performed	Excess CRC deaths (2020–2050, %)	Increase in CRC deaths per colonoscopy not performed	Excess LYs lost (2020–2050, %)	Increase in LYs lost per colonoscopy not performed
Increasing the cut-off value							
50 μg Hb/g faeces	11,700 (7.3%)	400 (0.08%)	0.04	200 (0.09%)	0.01	1,400 (0.25%)	0.18
55 μg Hb/g faeces	15,000 (10.2%)	600 (0.12%)	0.04	300 (0.15%)	0.02	2,400 (0.43%)	0.15
60 μg Hb/g faeces	18,700 (12.7%)	700 (0.14%)	0.03	300 (0.19%)	0.02	3,200 (0.58%)	0.17
70 μg Hb/g faeces	25,100 (17.0%)	900 (0.18%)	0.03	400 (0.26%)	0.02	4,400 (0.80%)	0.18
Skipping screening ages							
55-year-olds	9,200 (6.2%)	200 (0.04%)	0.02	100 (0.08%)	0.02	2,700 (0.48%)	0.29
63-year-olds	7,400 (5.0%)	200 (0.05%)	0.03	200 (0.10%)	0.02	2,300 (0.41%)	0.31
63- and 65-year-olds	16,100 (10.9%)	600 (0.12%)	0.03	400 (0.24%)	0.03	5,200 (0.93%)	0.32
Extending the screening interval							
28 months	12,600 (8.6%)	-200 (-0.04%)	-0.01	-200 (-0.12%)	-0.02	600 (0.11%)	0.05
30 months	19,000 (12.9%)	-200 (-0.03%)	-0.01	-300 (-0.19%)	-0.02	900 (0.16%)	0.05
32 months	18,500 (12.5%)	-200 (-0.05%)	-0.01	-500 (-0.27%)	-0.03	1,200 (0.21%)	0.06
34 months	18,000 (12.2%)	-200 (-0.05%)	-0.01	-600 (-0.35%)	-0.03	1,100 (0.20%)	0.06
36 months	16,200 (11.0%)	400 (0.08%)	0.02	-100 (-0.08%)	-0.01	5,300 (0.95%)	0.32

3-month disruption in the first half of 2020 due to the COVID-19 pandemic. Simulated three different strategies for the total target population: 1) increasing the FIT cut-off, 2) skipping one screening for specific screening ages, and 3) extending the screening interval.

De Jonge L et al. PLoS ONE 2022

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Adenoma Detection Rate

Table 2. Adenoma Detection Rate and Risk of an Interval Colorectal Cancer among All Patients.

Adenoma Detection Rate	Interval Cancer	Hazard Ratio (95% CI)*	Unadjusted Risk
	no. of cases		*no. of cases/ 10,000 person-yr*
Continuous rate	712	0.97 (0.96–0.98)	7.7
Rate quintile			
Quintile 1: 7.35–19.05%	186	1.00 (reference)	9.8
Quintile 2: 19.06–23.85%	144	0.93 (0.70–1.23)	8.6
Quintile 3: 23.86–28.40%	139	0.85 (0.68–1.06)	8.0
Quintile 4: 28.41–33.50%	167	0.70 (0.54–0.91)	7.0
Quintile 5: 33.51–52.51%	76	0.52 (0.39–0.69)	4.8

Corley DA et al. NEJM 2014

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Serrated polyp detection and risk of interval post-colonoscopy colorectal cancer: a population-based study

David E F W M van Toledo, Joep E G IJspeert*, Patrick M M Bossuyt, Arne G C Bleijenberg, Monique E van Leerdam, Manon van der Vlugt, Iris Lansdorp-Vogelaar, Manon C W Spaander, Evelien Dekker*

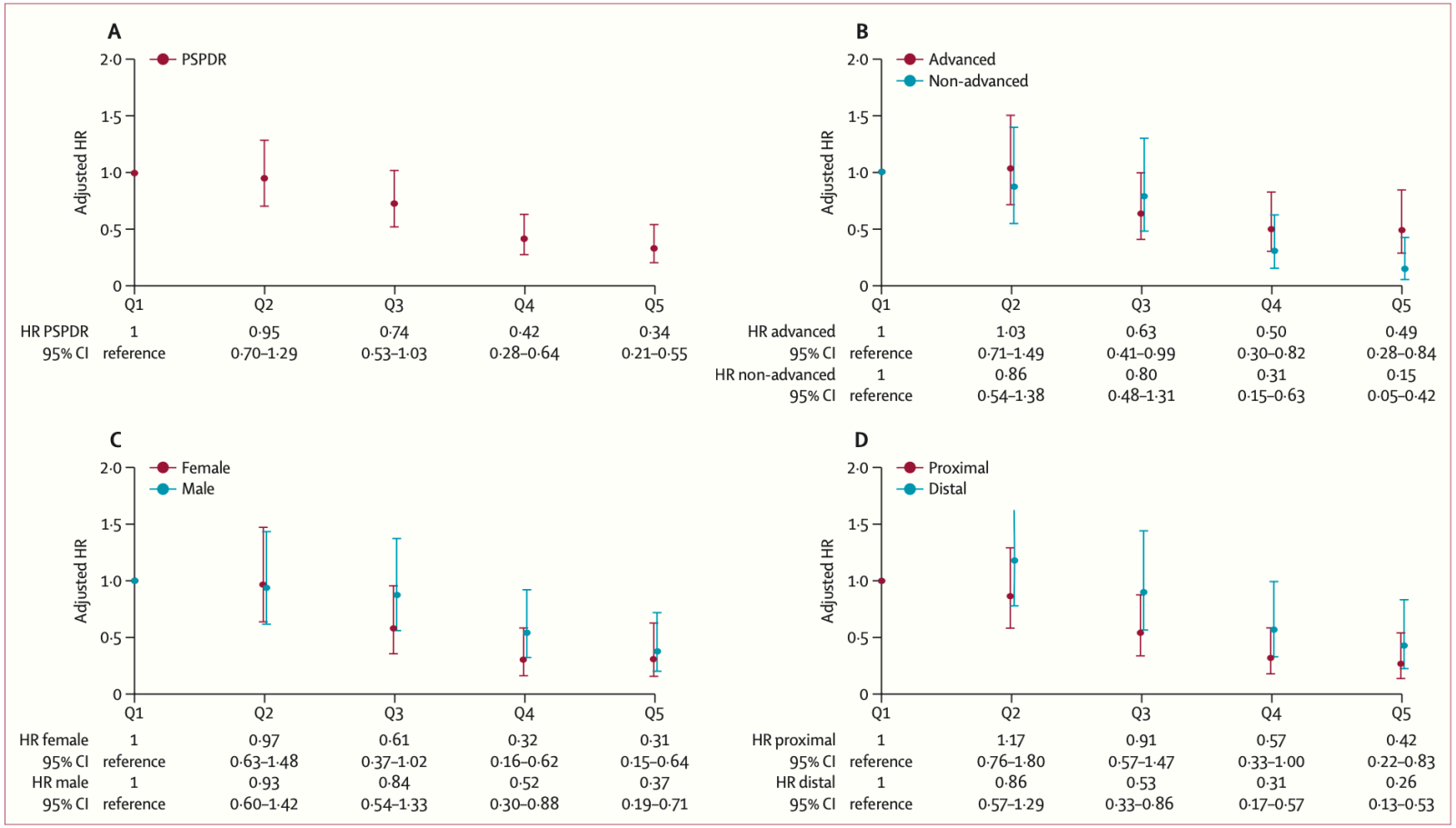

Figure 2: **Adjusted HRs for interval post-colonoscopy colorectal cancer according to quintile of PSPDR, overall (A), stratified by cancer stage (B), stratified by sex (C), and stratified by location (D)**
HRs were adjusted for sex and age (except for C), and random effect was applied to adjust for correlation within endoscopists. Proximal indicates located proximal to the descending colon, including the splenic flexure; distal indicates located distal to the splenic flexure. HR=hazard ratio. PSPDR=proximal serrated polyp detection rate.

Lancet Gastroenterol Hepatol 2022; 7: 747–54

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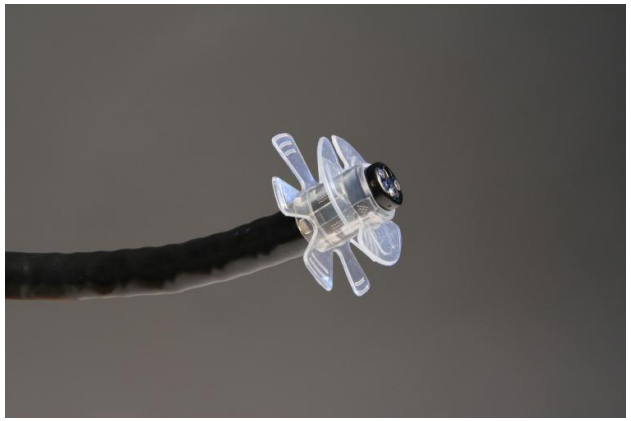
Distal Attachment Devices

Endocuff vision

Endoring



Distal Cap

https://www.youtube.com/watch?v=OmKWE1LAjD0

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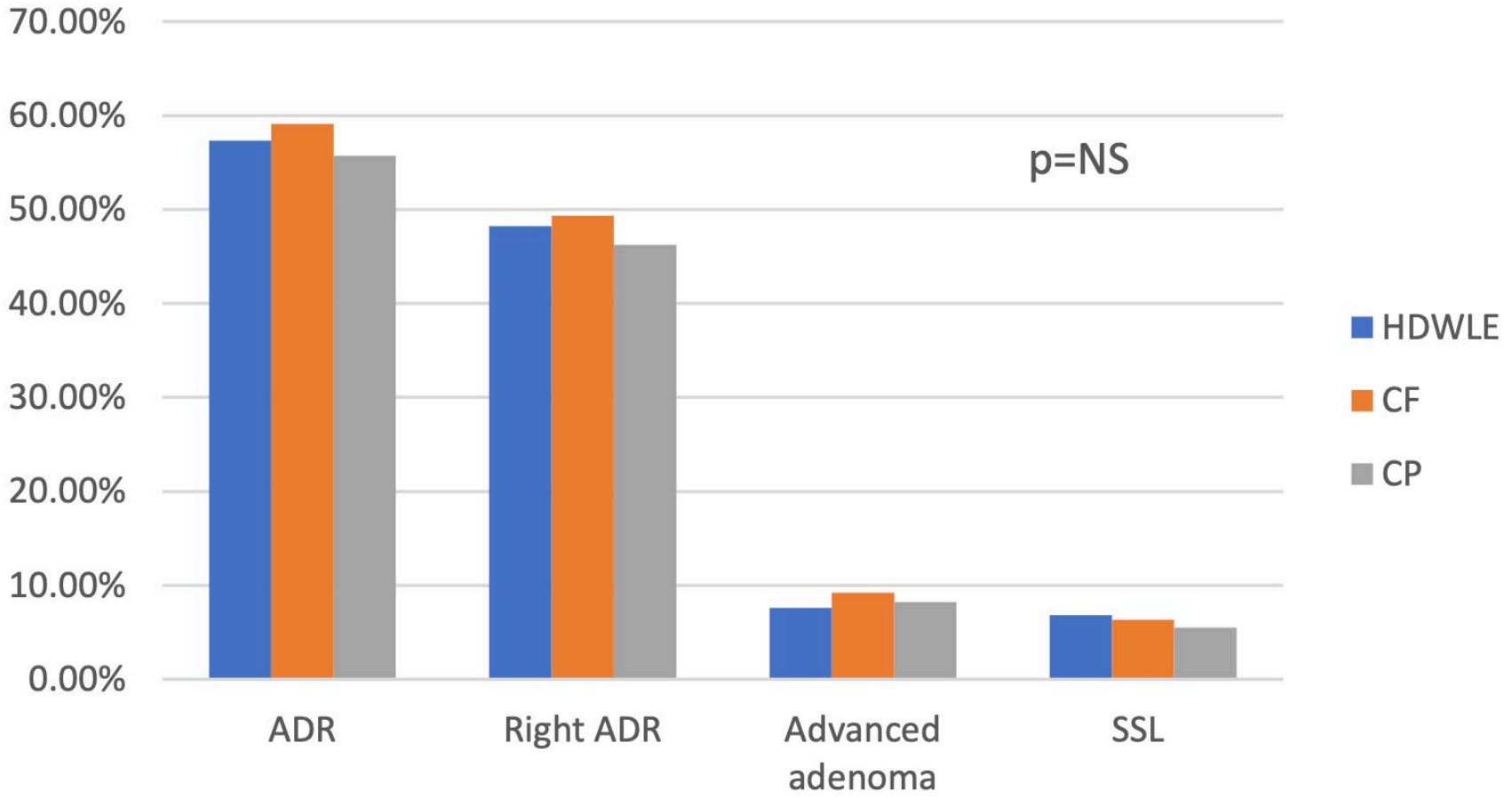
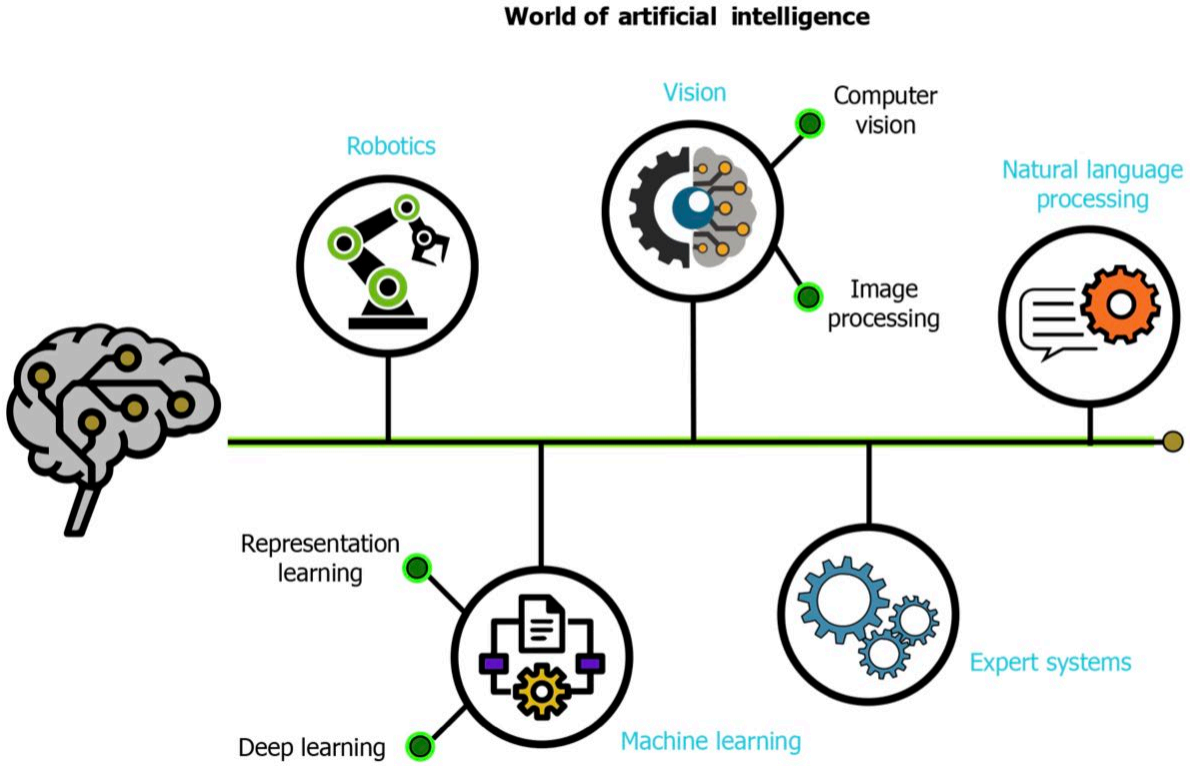
Comparison of overall ADR, right ADR, advanced adenoma detection, and sessile serrated lesion detection rates among 3 groups.



Desai et al. Clinical Gastroenterology and Hepatology 2022

Artificial intelligence: a set of fields that are combining to improve tasks that involve human cognitive functions such as learning, reasoning and self-correction.



World J Gastroenterol 2021 October 14; 27(38): 6399-6414

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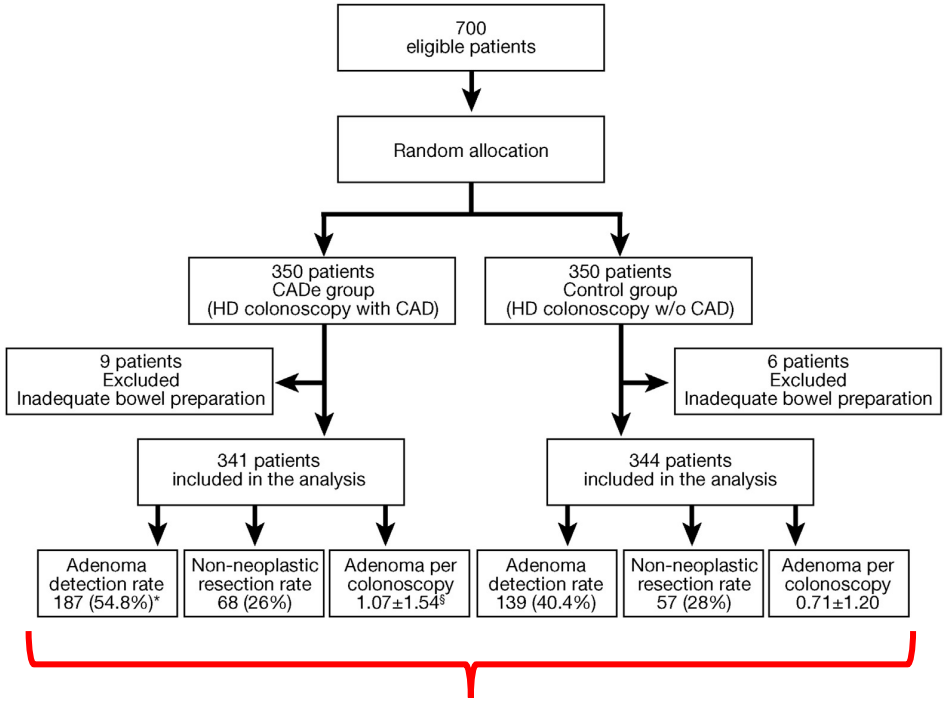
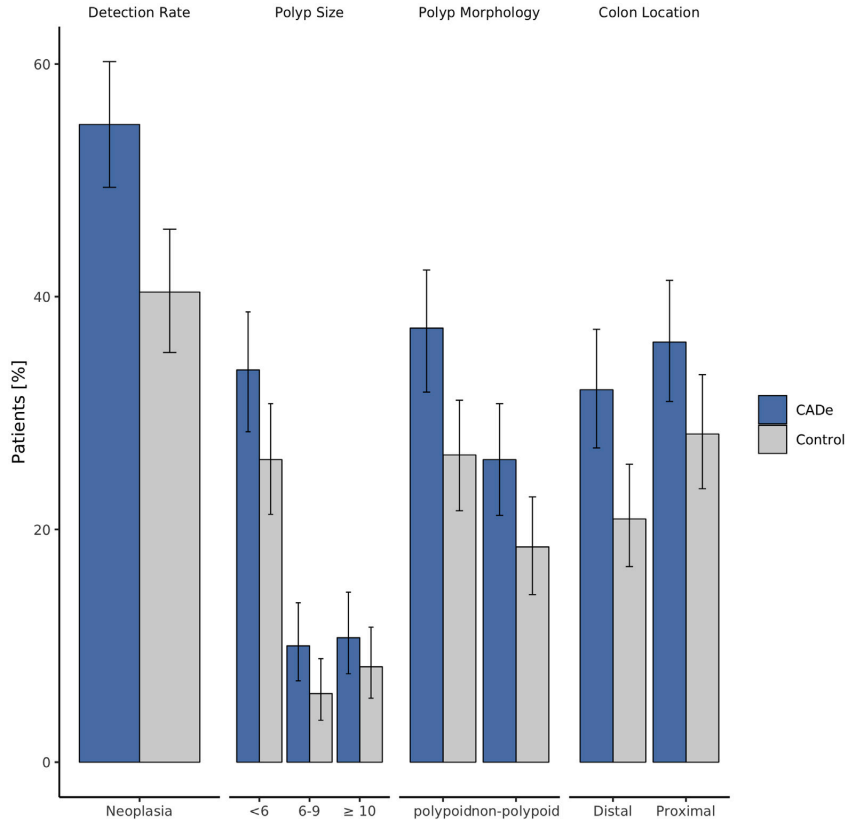
Efficacy of Real-Time Computer-Aided Detection of Colorectal Neoplasia in a Randomized Trial





Repici et al. Gastroenterology. 2020 Aug;159(2):512-520.e7.

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Real-Time Computer-Aided Detection of Colorectal Neoplasia During Colonoscopy A Systematic Review and Meta-analysis

Figure 2. Forest plot: ADR.

Study, Year (Reference)	CADe, *n* Events	CADe, *n* Total	WL, *n* Events	WL, *n* Total	Weight, %	Risk Ratio From Random-Effects M-H (95% CI)
Aniwan et al, 2023 (28)	163	312	130	310	5.4	1.25 (1.05 to 1.47)
Gimeno-García et al, 2023 (29)	88	155	70	157	4.3	1.27 (1.02 to 1.59)
Glissen Brown et al, 2022 (33)	57	113	48	110	3.4	1.16 (0.87 to 1.53)
Gong et al, 2020 (18)	58	355	27	349	1.9	2.11 (1.37 to 3.25)
Kamba et al, 2021 (34)	111	172	93	174	5.2	1.21 (1.01 to 1.44)
Liu et al, 2020 (19)	199	508	124	518	5.0	1.64 (1.36 to 1.97)
Liu et al, 2020 (20)	114	393	83	397	3.9	1.39 (1.08 to 1.77)
Mangas-Sanjuan et al, 2023 (27)	1033	1610	990	1603	7.6	1.04 (0.99 to 1.10)
Nakashima et al, 2023 (32)	123	207	99	208	5.1	1.25 (1.04 to 1.50)
Repici et al, 2020 (7)	187	341	139	344	5.6	1.36 (1.16 to 1.59)
Repici et al, 2022 (17)	176	330	147	330	5.6	1.20 (1.02 to 1.40)
Rondonotti et al, 2022 (25)	217	405	179	395	6.0	1.18 (1.03 to 1.36)
Shaukat et al, 2022 (26)	326	682	297	677	6.5	1.09 (0.97 to 1.22)
Su et al, 2020 (21)	89	308	52	315	3.1	1.75 (1.29 to 2.37)
Wallace et al, 2022 (35)	72	116	70	114	4.7	1.01 (0.82 to 1.24)
Wang et al, 2019 (23)	152	522	109	536	4.5	1.43 (1.16 to 1.77)
Wang et al, 2020 (22)	165	484	134	478	5.0	1.22 (1.01 to 1.47)
Wang et al, 2020 (36)	64	184	49	185	3.0	1.31 (0.96 to 1.79)
Wei et al, 2023 (31)	139	387	142	382	5.0	0.97 (0.80 to 1.16)
Xu et al, 2023 (30)	492	1238	432	1289	6.8	1.19 (1.07 to 1.31)
Yao et al, 2022 (24)	57	268	40	271	2.4	1.44 (1.00 to 2.08)
Total	4082	9090	3454	9142	100.0	1.24 (1.16 to 1.33)

Heterogeneity: $\tau^2 = 0.02$; $\chi^2 = 67.32$; $P < 0.001$; $I^2 = 70\%$
Test for overall effect: $Z = 6.19$ ($P < 0.001$)

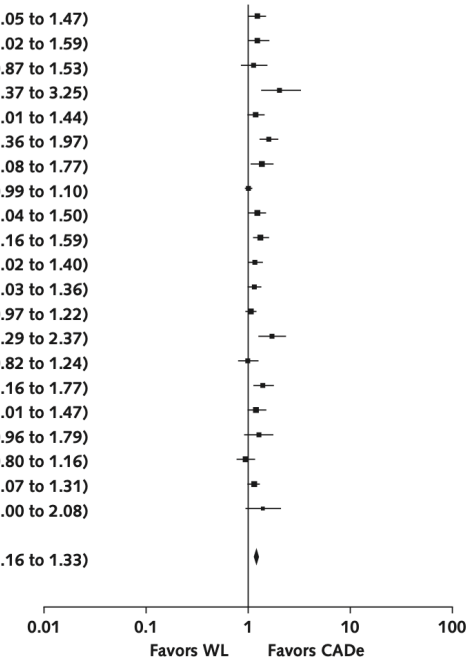
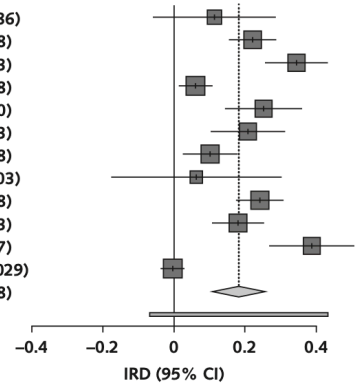


Figure 4. Forest plot: nonneoplastic lesions per colonoscopy.

Study, Year (Reference)	IRD (95% CI)
Glissen Brown et al, 2022 (33)	0.114 (–0.058 to 0.286)
Liu et al, 2020 (19)	0.222 (0.156 to 0.288)
Liu et al, 2020 (20)	0.346 (0.258 to 0.433)
Mangas-Sanjuan et al, 2023 (27)	0.062 (0.015 to 0.108)
Repici et al, 2020 (7)	0.253 (0.145 to 0.360)
Repici et al, 2022 (17)	0.209 (0.105 to 0.313)
Rondonotti et al, 2022 (25)	0.103 (0.027 to 0.178)
Wallace et al, 2022 (35)	0.063 (–0.176 to 0.303)
Wang et al, 2019 (23)	0.242 (0.176 to 0.308)
Wang et al, 2020 (22)	0.181 (0.109 to 0.253)
Wei et al, 2023 (31)	0.389 (0.270 to 0.507)
Xu et al, 2023 (30)	–0.003 (–0.036 to 0.029)
Total	0.183 (0.107 to 0.258)
Prediction interval	(–0.068 to 0.434)

Heterogeneity: $\chi^2_{11} = 142.11$ ($P < 0.001$); $I^2 = 92\%$



«The use of CADe for polyp detection during colonoscopy results in increased detection of adenomas but not advanced adenomas and in higher rates of unnecessary removal of nonneoplastic polyps».

Hassan C et al. Ann Intern Med. 2023;176:1209-1220.

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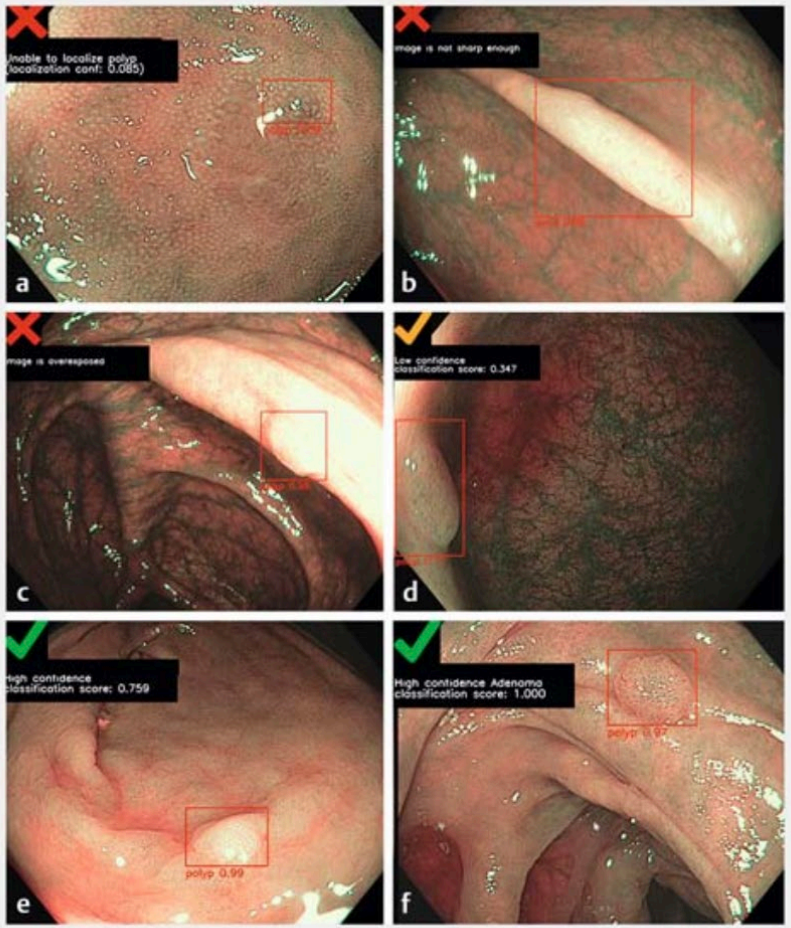
Computer-aided diagnosis for optical diagnosis of diminutive colorectal polyps including sessile serrated lesions: a real-time comparison with screening endoscopists



▶ **Table 2** Diagnostic performance of the computer-aided diagnosis system and endoscopists in differentiating diminutive colorectal polyps.

	Overall		Only high-confidence predictions	
	CADx (n = 423)	Endoscopists (n = 423)	CADx (n = 422)	Endoscopists (n = 367)
Per polyp subtype accuracy[1]	73.1 (68.6–77.2)	76.1 (71.8–80.1)	73.2 (68.7–77.4)	79.8 (75.4–83.8)
Adenoma vs. nonadenoma (i. e. serrated), % (95 %CI)				
▪ Accuracy	77.8 (73.3–81.7)	82.7 (78.8–86.2)	78.0 (73.7–81.8)	85.0 (80.9–88.5)
▪ Sensitivity	90.3 (87.0–93.7)	87.3 (83.6–91.1)	90.3 (87.0–93.7)	89.9 (86.2–93.5)
▪ Specificity	47.2 (38.3–56.0)	71.5 (63.6–79.5)	47.5 (38.7–56.4)	72.3 (63.6–81.0)
▪ PPV	80.6 (76.4–84.9)	88.2 (84.6–91.9)	80.9 (76.7–85.1)	89.5 (85.8–93.2)
▪ NPV	66.7 (56.8–76.6)	69.8 (61.8–77.9)	66.7 (56.8–76.6)	73.0 (64.3–81.7)
SSL vs. non-SSL, % (95 %CI)				
▪ Accuracy	88.9 (85.5–91.7)	88.8 (85.2–91.9)	88.9 (85.5–91.7)	88.8 (85.2–91.9)
▪ Sensitivity	17.1 (5.6–28.6)	58.5 (43.5–73.6)	17.1 (5.6–28.6)	67.7 (50.6–82.8)
▪ Specificity	96.6 (94.8–98.4)	89.5 (86.5–92.6)	96.6 (94.8–98.4)	91.0 (88.0–94.1)
▪ PPV	35.0 (14.1–55.9)	37.5 (25.6–49.4)	35.0 (14.1–55.9)	42.3 (28.9–55.7)
▪ NPV	91.6 (88.9–94.3)	95.3 (93.0–97.5)	91.5 (88.8–94.3)	96.5 (94.5–98.5)

CADx, computer-aided diagnosis; PPV, positive predictive value; NPV, negative predictive value; SSL, sessile serrated lesion.
[1] For the calculation of the per polyp subtype accuracy adenomas, SSLs and hyperplastic polyps were considered as different histological subtypes.

Howen BBS et al. Endoscopy 2023; 55: 756–765

Cologuard vs FIT

Table 1. Sensitivity and Specificity of the Multitarget Stool DNA Test and the Fecal Immunochemical Test (FIT) for the Most Advanced Findings on Colonoscopy.

Most Advanced Finding	Colonoscopy (N=9989)	Multitarget DNA Test (N=9989)		FIT (N=9989)	
		Positive Results	Sensitivity (95% CI)	Positive Results	Sensitivity (95% CI)
	no.	*no.*	%	*no.*	%
Colorectal cancer					
Any	65	60	92.3 (83.0–97.5)	48	73.8 (61.5–84.0)
Stage I to III*	60	56	93.3 (83.8–98.2)	44	73.3 (60.3–83.9)
Colorectal cancer and high-grade dysplasia	104	87	83.7 (75.1–90.2)	66	63.5 (53.5–72.7)
Advanced precancerous lesions†	757	321	42.4 (38.9–46.0)	180	23.8 (20.8–27.0)
Nonadvanced adenoma	2893	498	17.2 (15.9–18.6)	220	7.6 (6.7–8.6)
			Specificity (95% CI)		Specificity (95% CI)
All nonadvanced adenomas, non-neoplastic findings, and negative results on colonoscopy	9167	1231	86.6 (85.9–87.2)	472	94.9 (94.4–95.3)
Negative results on colonoscopy	4457	455	89.8 (88.9–90.7)	162	96.4 (95.8–96.9)

- **Sensitivity** of MT-sDNA test exceeded that of FIT
- FIT slightly more **specific**

Imperiale TF et al. N Engl J Med 2014; 370: 1287-97

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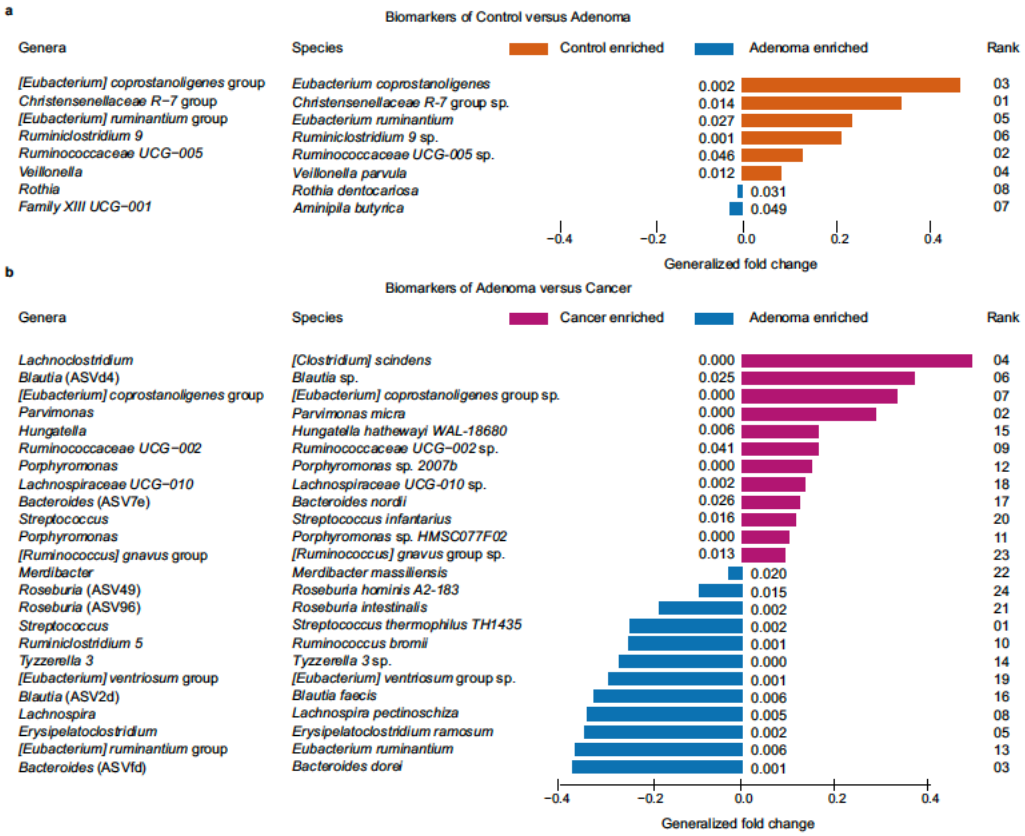
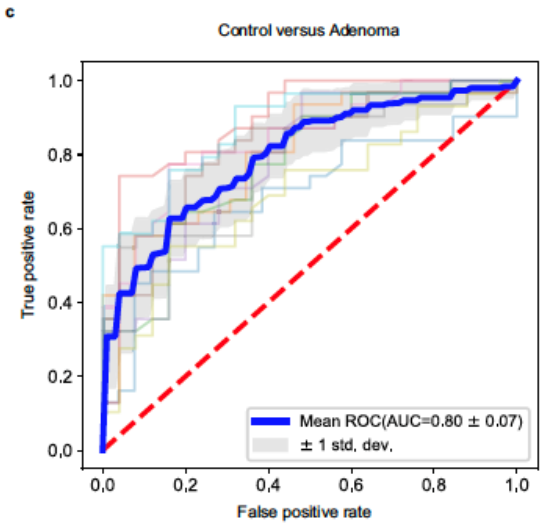
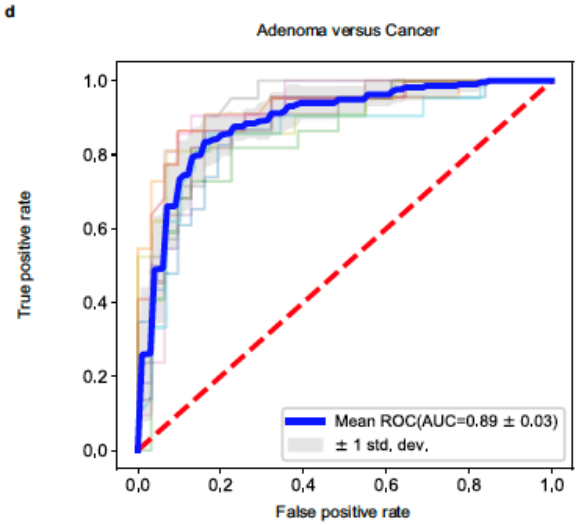
Microbial markers across populations in early detection of colorectal cancer



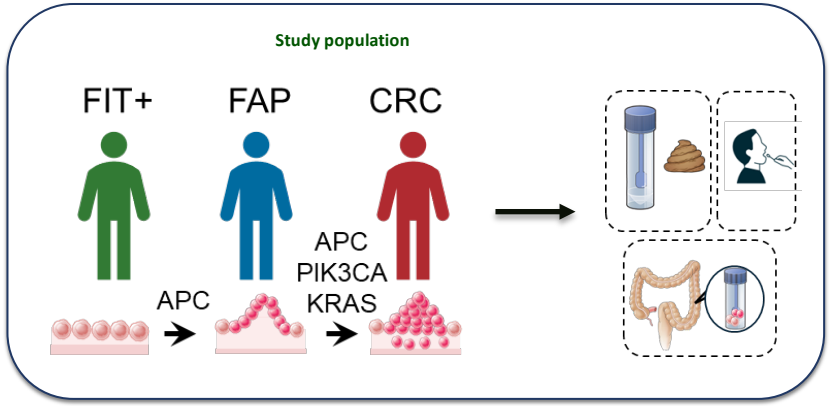




Wu Y et al. Nature Communications 2021;12:3063

A multitarget framework for WNT signalling-driven colorectal cancer prevention and early detection

The aim of the study was to identify potential targets for the prevention and early detection of CRC in the setting of Wnt/β-catenin disruption.



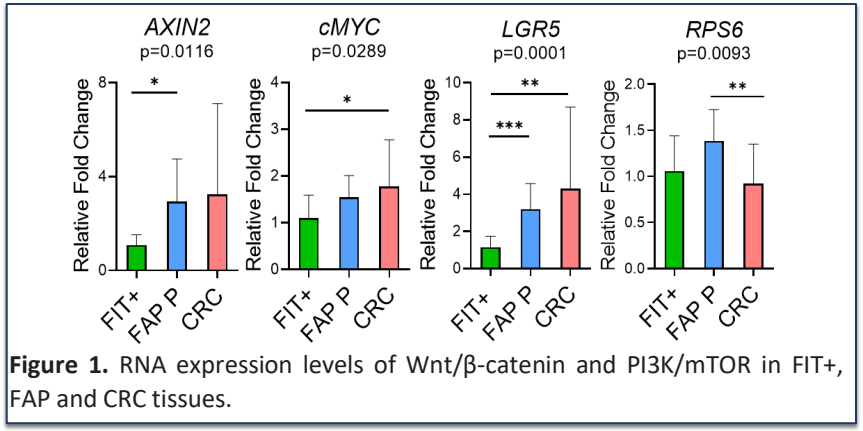


Figure 1. RNA expression levels of Wnt/β-catenin and PI3K/mTOR in FIT+, FAP and CRC tissues.

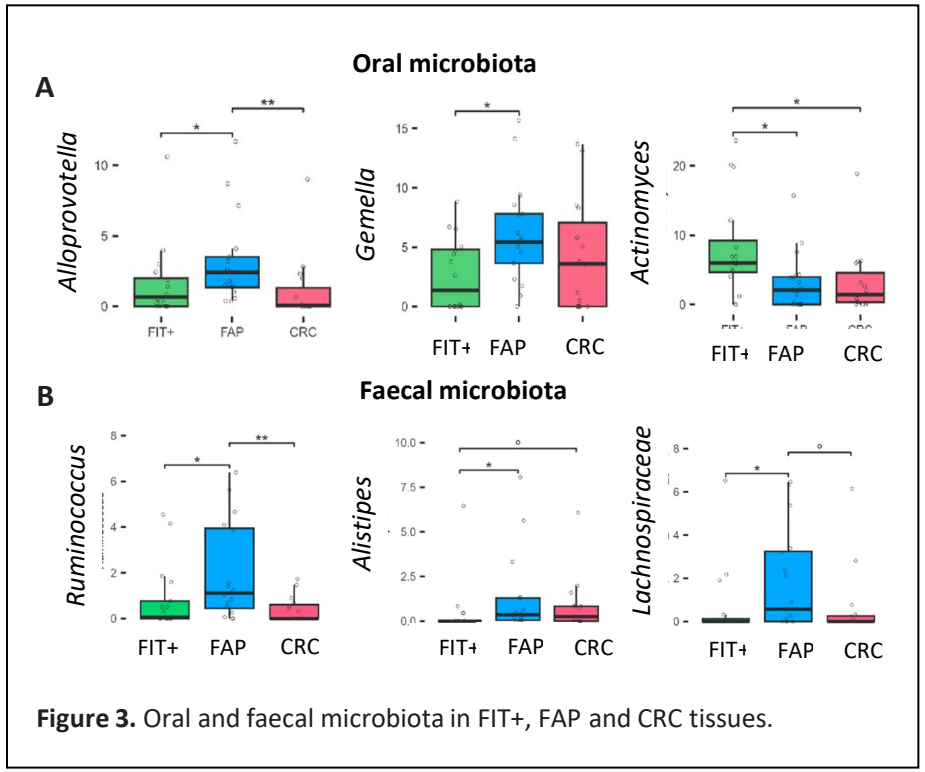


Figure 3. Oral and faecal microbiota in FIT+, FAP and CRC tissues.

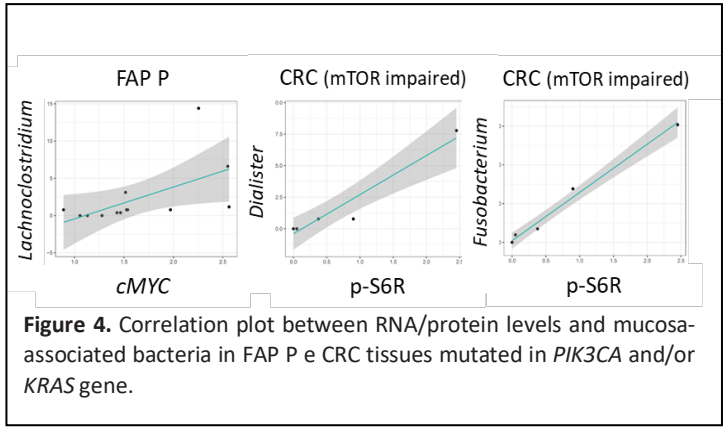


Figure 4. Correlation plot between RNA/protein levels and mucosa-associated bacteria in FAP P e CRC tissues mutated in *PIK3CA* and/or *KRAS* gene.

Di Paola et al. UEG Week 2023

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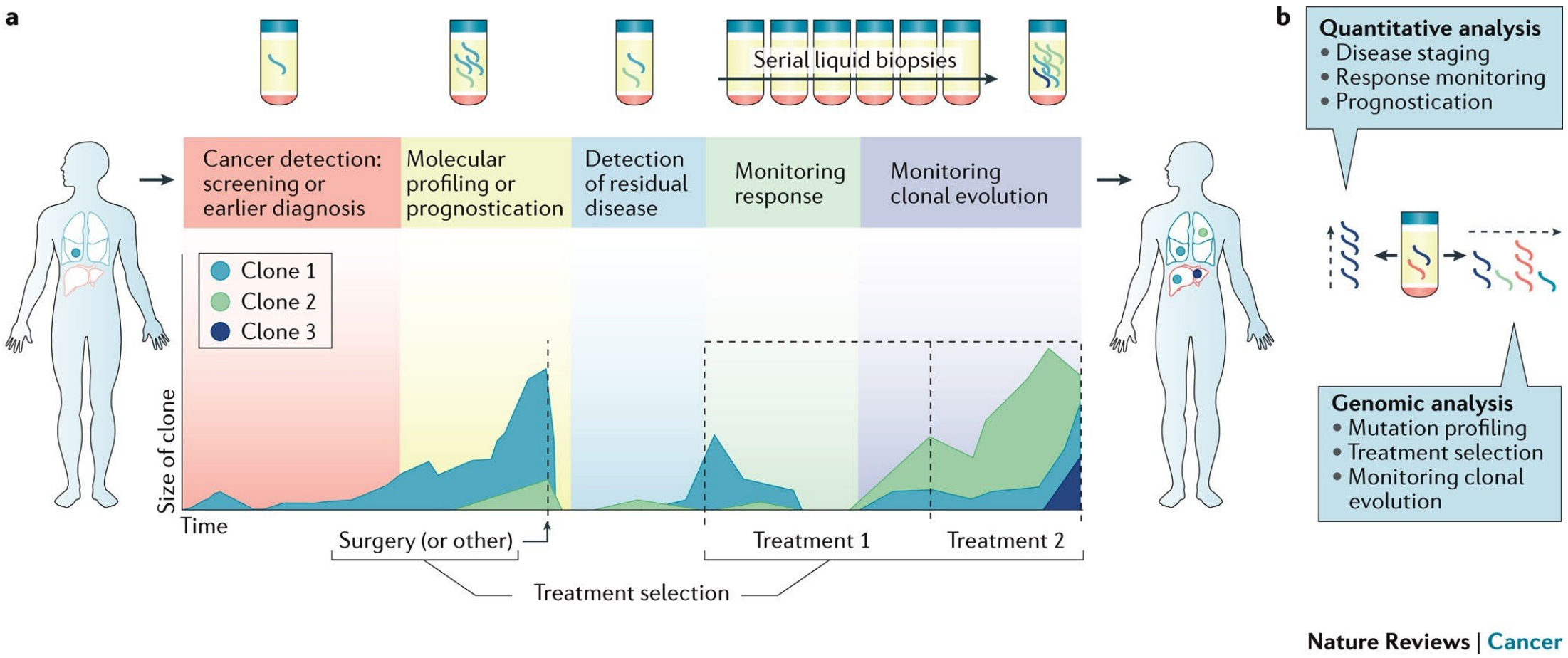
Liquid Biopsy and Colorectal Cancer



Wan JCM et al. Nature Reviews Cancer 2017; 17: 223–238

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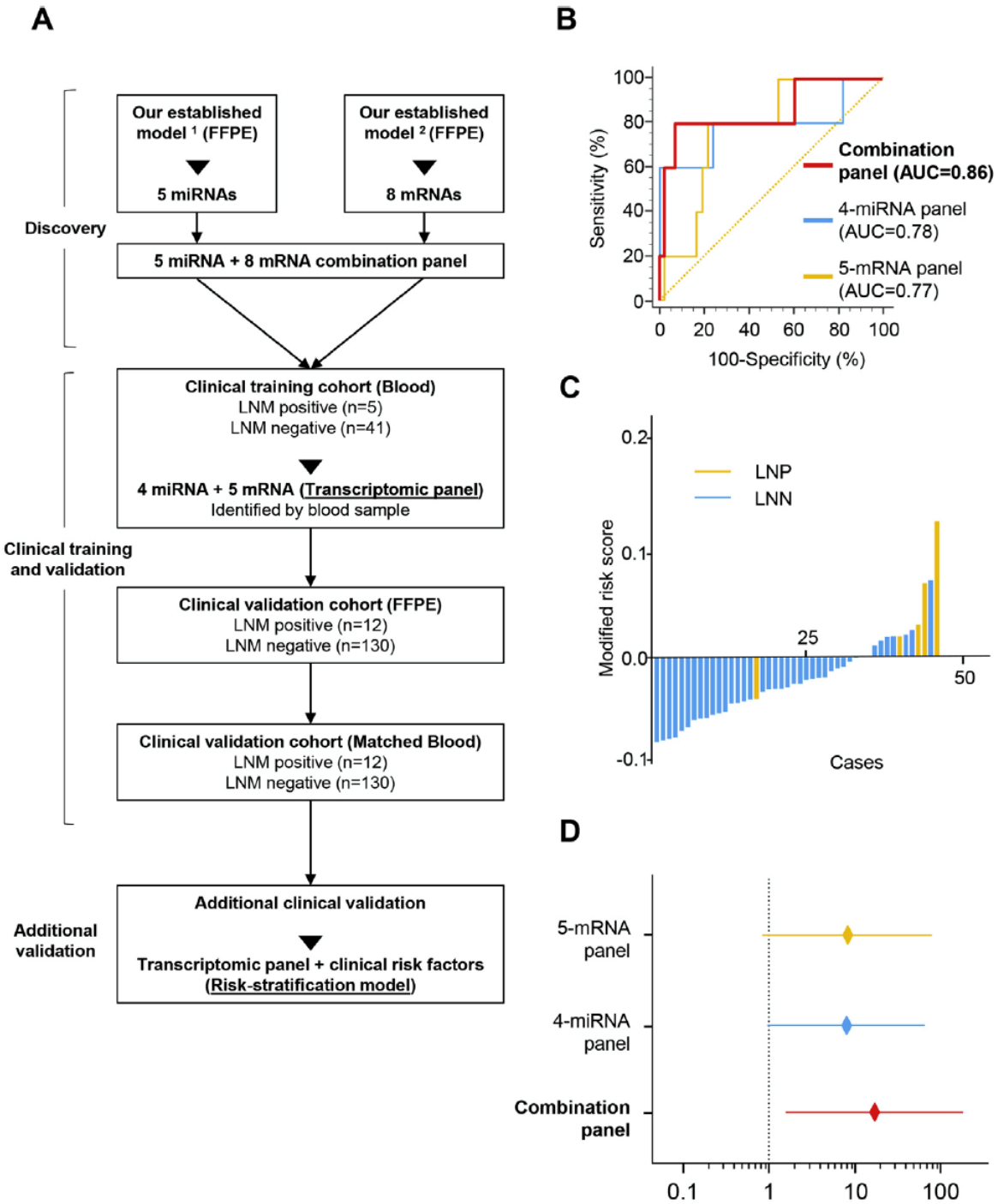

Liquid biopsy for pT1 risk stratification

Wada Y et al. Gastroenterology 2021;161:151–162

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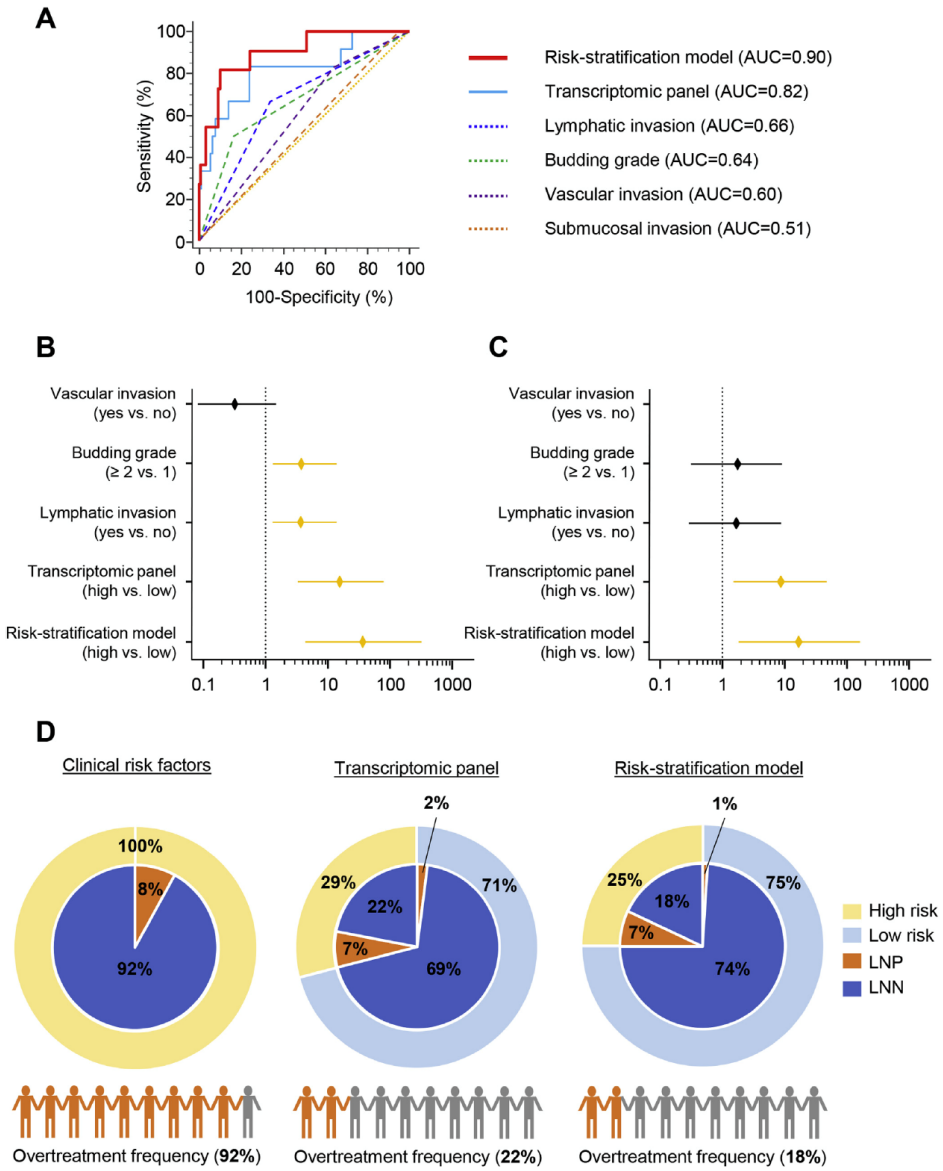
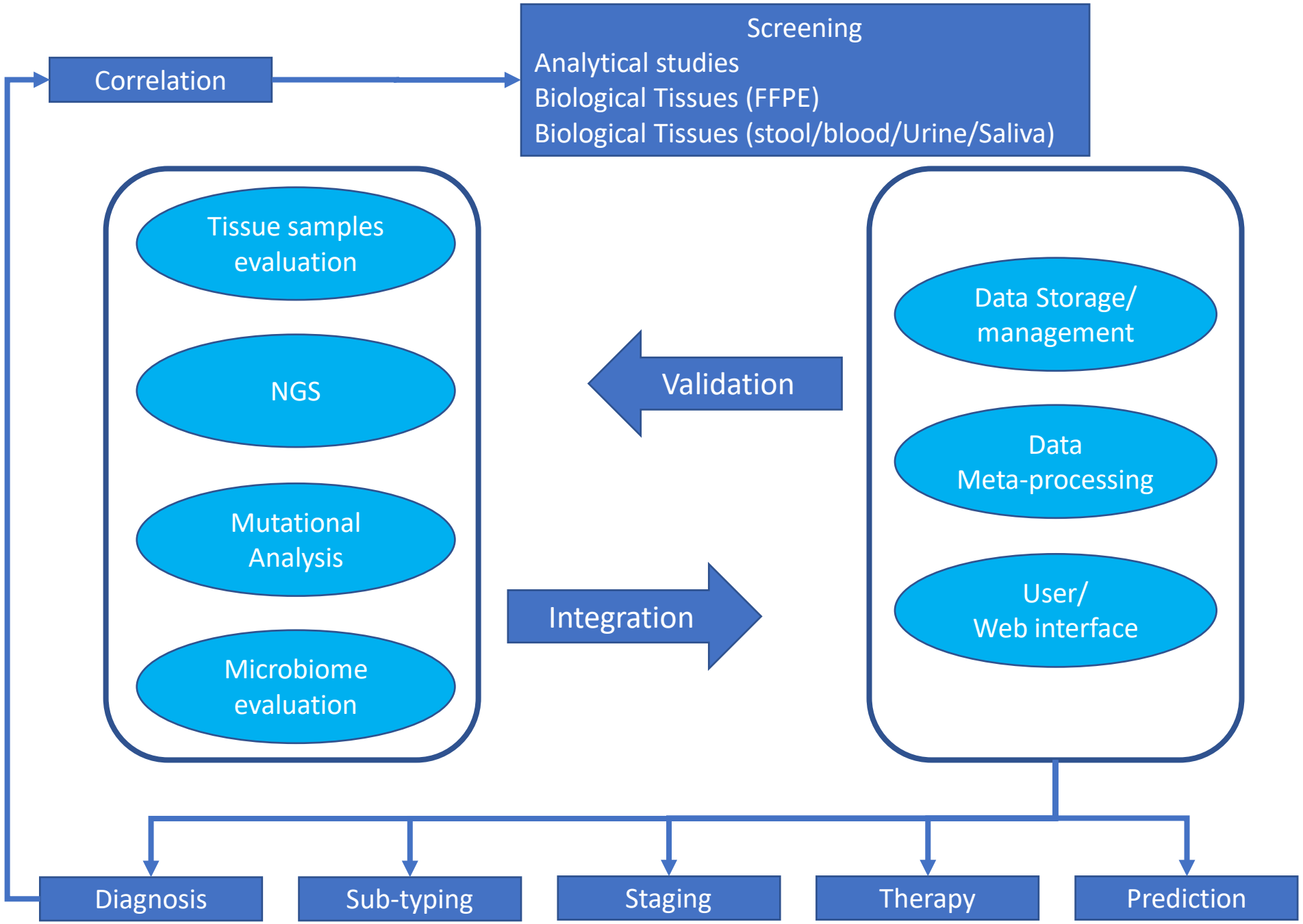
Liquid biopsy for pT1 risk stratification



Wada Y et al. Gastroenterology 2021;161:151–162


Screening
Analytical studies
Biological Tissues (FFPE)
Biological Tissues (stool/blood/Urine/Saliva)
Correlation
Tissue samples evaluation
NGS
Mutational Analysis
Microbiome evaluation
Validation
Integration
Data Storage/ management
Data Meta-processing
User/ Web interface
Diagnosis
Sub-typing
Staging
Therapy
Prediction

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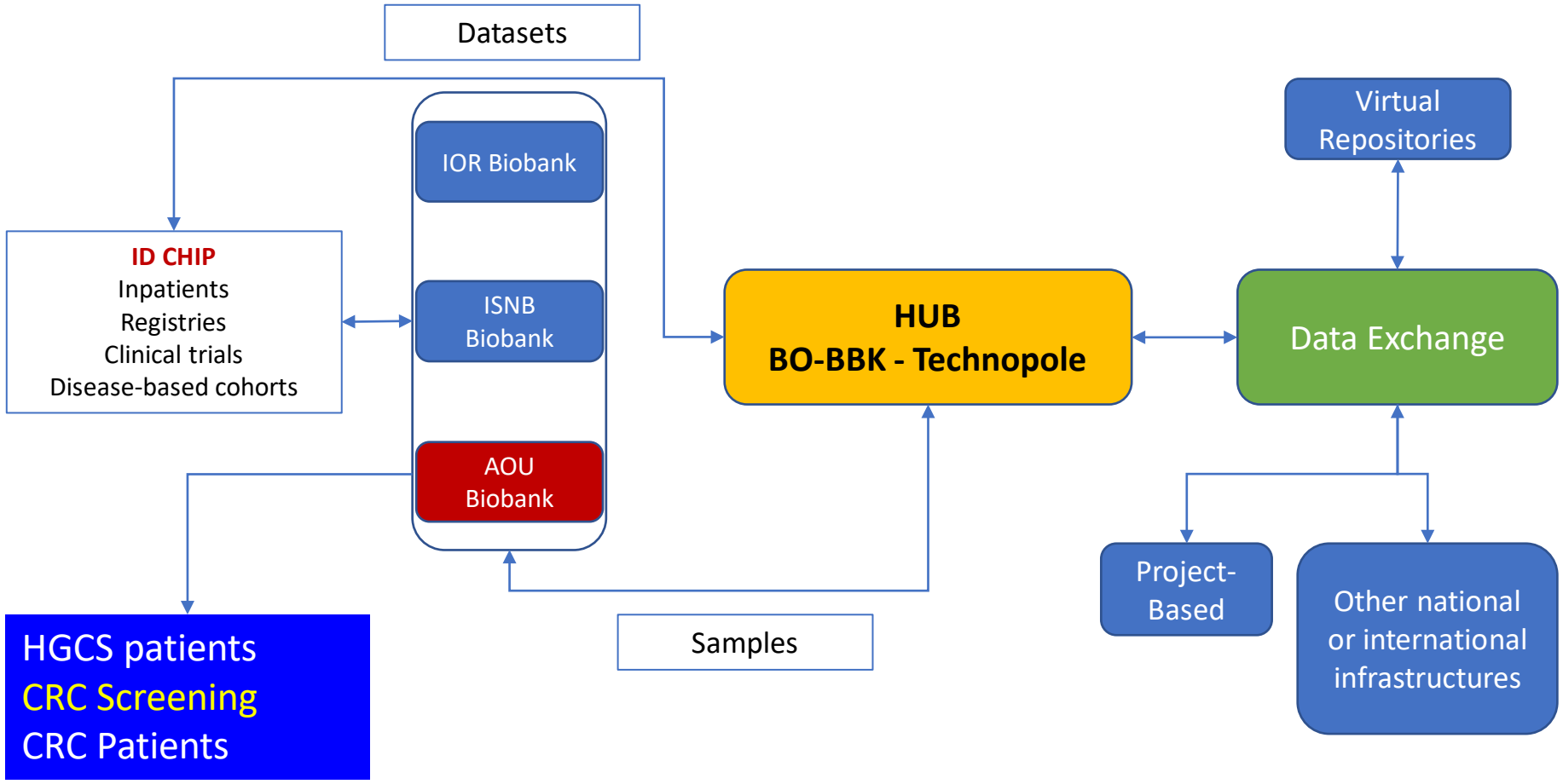
Biobank at IRCCS AOU Bologna



Conclusions

- CRC screening is a research platform that over the years has continuously led to understanding the epidemiology, the natural history and the pathogenesis of the disease
- There are still important gaps that need to be filled such as true prevalence of hereditary syndromes within the general population, new and improved screening tests, best and quality measures
- Using the CRC screening as research platform will lead to preventing and treating the disease more efficiently