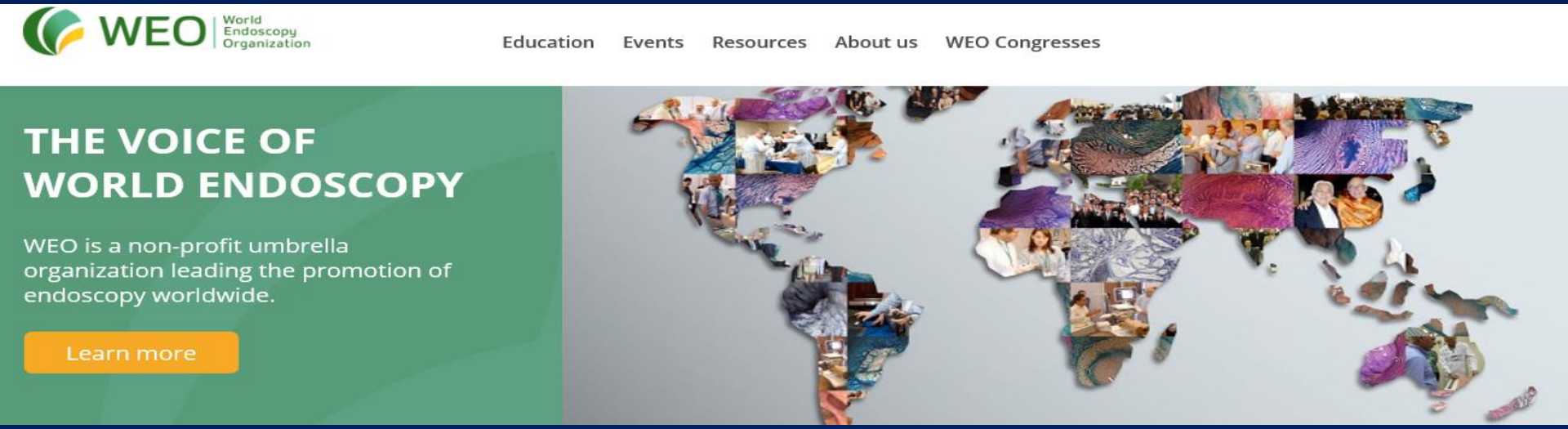
SEP 25, 2017

Result of screening and surveillance colonoscopy in young Korean adults < 50 years



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When to start?

US Multi-Society Task Force, European expert recommendation, Asia-Pacific consensus recommendation

"Screening colonoscopy should be started at age ≥ 50 for asymptomatic, average-risk adult"

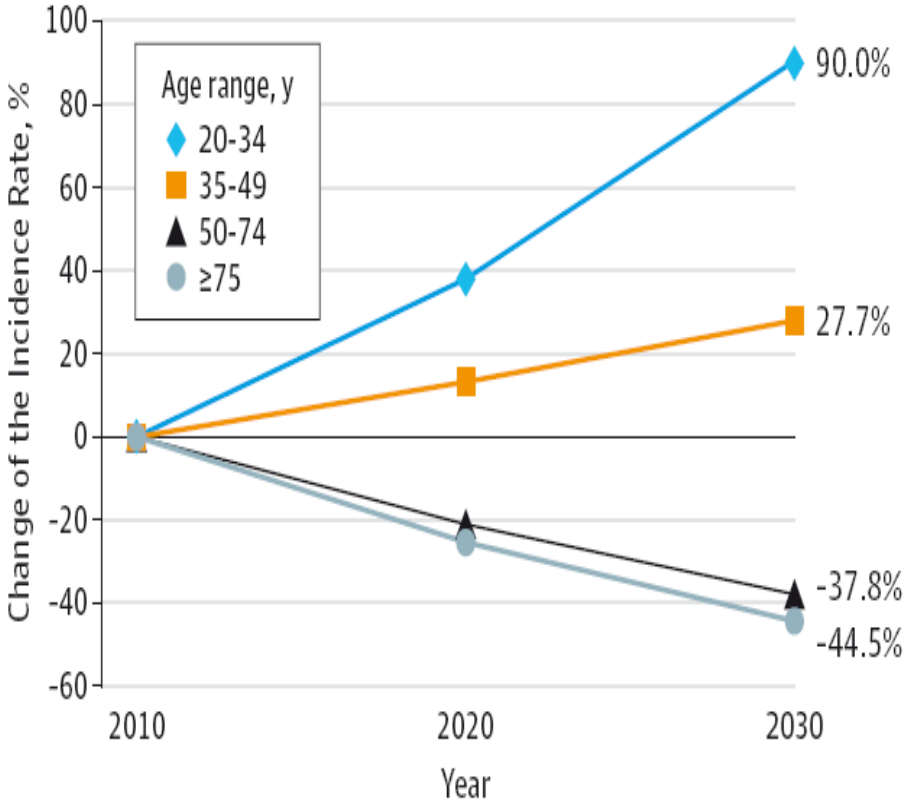
Young age cohort < 50s

- screening colonoscopy is not routinely recommended
- few reports on the prevalence of colorectal neoplasia
- widespread use of colonoscopy

Ann Intern Med 2008;149:627-37, Endoscopy 2009;46:200-208, Gut 2008;57:1166-1176, Gut 2015;64:121-132

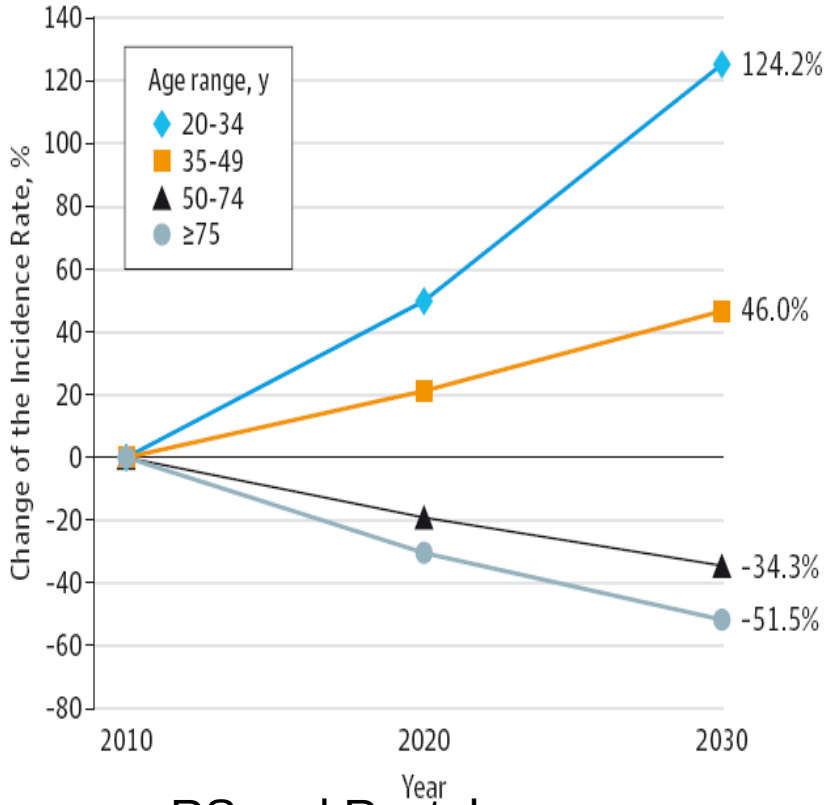
Attack of young age

Figure 2. Annual Percentage Change–Based Predicted Incidence Rates of Colon Cancer by Age Compared With Incidence Rate in 2010



Colon cancer

Figure 4. Annual Percentage Change–Based Predicted Incidence Rates of Rectosigmoid and Rectal Cancers by Age Compared With Incidence Rate in 2010



RS and Rectal cancer

JAMA Surgery 2015;150:17-22

The risk of colorectal advanced neoplasia in young adults versus those of screening colonoscopy in patients aged 50-54 years

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Aims

To compare the detection rate of overall neoplasia and advanced neoplasia in screening or diagnostic colonoscopy in young age cohort < 50s against those in screening colonoscopy for 50-54s cohort, who represent the youngest average-risk cohort eligible for screening colonoscopy.

Method I

Design: A multi-center, retrospective study at 14 University hospitals to compare the detection rate of overall neoplasia and advanced neoplasia in screening or diagnostic colonoscopy in young age cohort < 50s against those in screening colonoscopy for 50-54s cohort between June 2006 and June 2015

Exclusion: patients with IBD, defined genetic syndromes, any malignancy or previous colorectal surgery, incomplete procedures, a strong family history

Sample size

Known prevalence of advanced neoplasia:

1.0%-3.7% (pooled detection rate: 2.0%) for screening young age cohorts

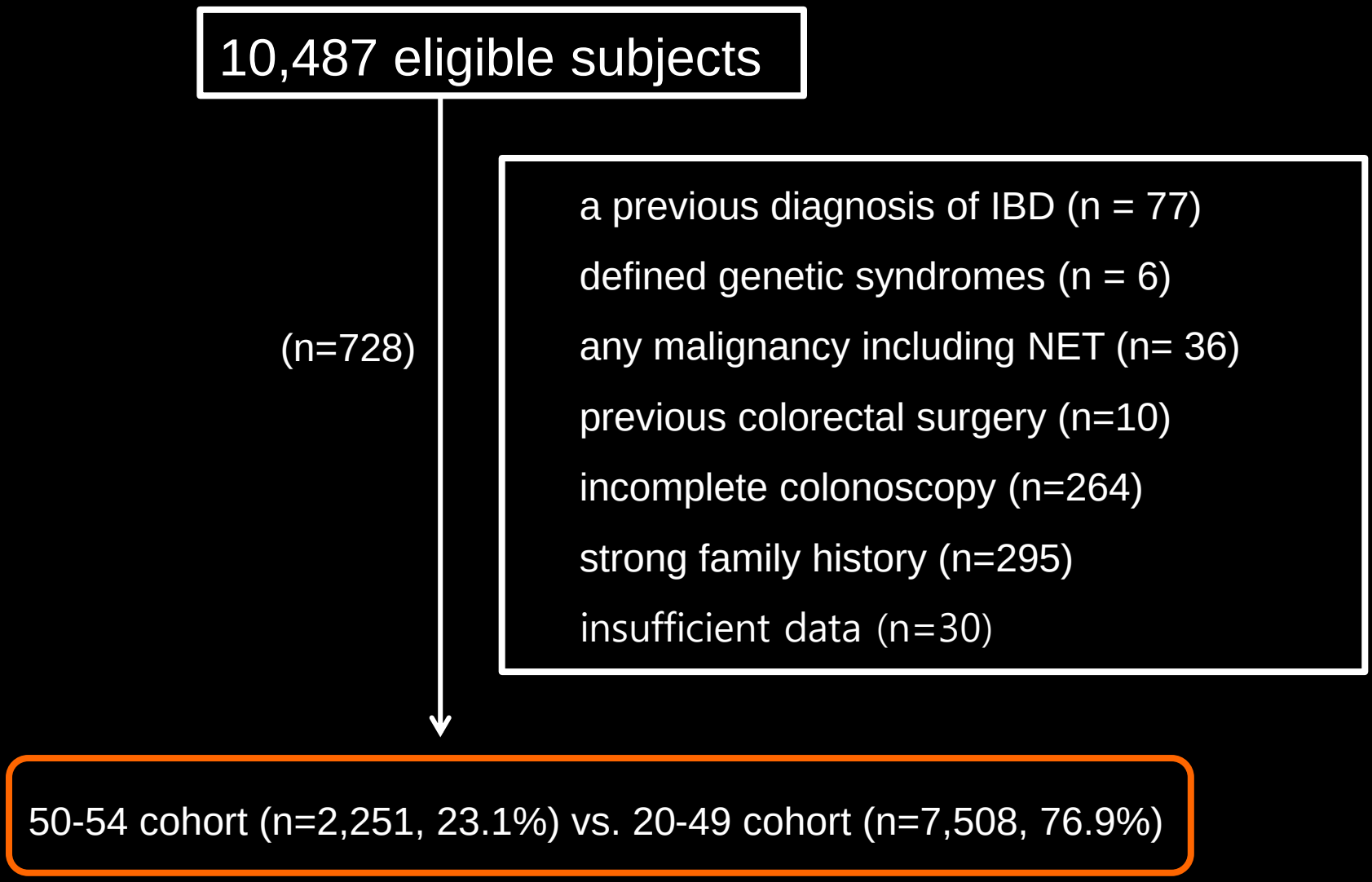
4.1%-4.4% for screening 50-54s Korean adults

Assumption: two-fold difference in the prevalence of advanced neoplasia between young age cohort and 50-54s screening cohort would be sufficient

→ a minimum of 1,178 subjects were required

World J Gastroenterol 2016;22:7365-7372,
Gastrointest Endosc 2010;72:480-489, J Gastroenterol Hepatol 2010;25:519-525

Results I


10,487 eligible subjects
(n=728)
a previous diagnosis of IBD (n = 77)
defined genetic syndromes (n = 6)
any malignancy including NET (n= 36)
previous colorectal surgery (n=10)
incomplete colonoscopy (n=264)
strong family history (n=295)
insufficient data (n=30)
50-54 cohort (n=2,251, 23.1%) vs. 20-49 cohort (n=7,508, 76.9%)

Results II

Table 1. Demographic and Clinical Characteristics of Young Age Cohort and 50-54 Age Cohort

Clinical characteristics	50-54 age cohort	Young age cohort		Young age cohort			
	50-54s	20-49s	*P*	45-49s	40-44s	20-39s	*P*
Number (%)	2257 (23.1)	7508 (76.9)		3451 (46.0)	2773 (36.9)	1284 (13.1)	
Age, mean ± SD	52.0 ± 1.4	43.3 ± 4.6	< 0.001	47.2 ± 1.4	42.1 ± 1.4	35.4 ± 2.8	< 0.001
Sex (male), n (%)	1259 (55.8)	4459 (59.4)	0.002	2007 (58.2)	1658 (59.8)	794 (61.8)	0.002
BMI, mean ± SD	23.6 ± 3.1	23.8 ± 4.3	0.002	23.9 ± 5.1	23.7 ± 3.4	23.5 ± 3.5	0.012
BMI ≥ 25 kg/m^2, n (%)	630 (28.0)	2447 (32.6)	< 0.001	1146 (33.2)	935 (33.7)	324 (25.2)	< 0.001
Smoking, n (%)	506 (22.4)	1997 (26.6)	< 0.001	879 (25.5)	797 (28.7)	321 (25.0)	< 0.001
Alcohol consumption, n (%)	678 (30.0)	3064 (40.8)	< 0.001	1407 (40.8)	1196 (43.1)	461 (35.9)	< 0.001
Family history of CRC, n (%)	78 (3.5)	322 (4.3)	0.080	136 (3.9)	124 (4.5)	62 (4.8)	0.150
Comorbidity, n (%)	485 (21.5)	990 (13.2)	< 0.001	542 (15.7)	326 (11.8)	122 (9.5)	< 0.001
Diabetes mellitus, n (%)	110 (4.9)	152 (2.0)	< 0.001	91 (2.6)	49 (1.8)	12 (0.9)	< 0.001
Hypertension, n (%)	208 (9.2)	377 (5.0)	< 0.001	219 (6.3)	113 (4.1)	45 (3.5)	< 0.001
Protective medication, n (%)	188 (8.3)	279 (3.7)	< 0.001	160 (4.6)	92 (3.3)	27 (2.1)	< 0.001

SD, standard deviation; BMI, body mass index; CRC, colorectal cancer

Table 2. Prevalence of colorectal neoplasia in the young age cohort & those in the 50-54 age cohort

	50-54 age cohort	Young age cohort		Young age cohort			
Colonoscopy findings	50-54s	20-49s	*P*	45-49s	40-44s	20-39s	*P*
Number (%)	2257 (23.1)	7508 (76.9)		3451 (46.0)	2773 (36.9)	1284 (17.1)	
Indication of colonoscopy, n (%)							
Screening	1800 (79.8)	5544 (73.8)	< 0.001	2591 (75.1)	2153 (77.6)	800 (62.3)	< 0.001
Diagnostic	457 (20.2)	1964 (26.2)		860 (24.9)	620 (22.4)	484 (37.7)	
Overall colonoscopy, n (%)							
Overall neoplasia	814 (36.1)	1919 (25.6)	< 0.001	1001 (29.0)	671 (24.2)	247 (19.2)	< 0.001
Advanced neoplasia	221 (9.8)	425 (5.7)	< 0.001	244 (7.1)	125 (4.5)	54 (4.2)	< 0.001
Invasive carcinoma	20 (0.9)	20 (0.3)	< 0.001	8 (0.2)	7 (0.3)	5 (0.4)	0.635
Screening colonoscopy, n (%)							
Overall neoplasia	648 (36.0)	1468 (26.5)	< 0.001	780 (30.1)	524 (24.3)	164 (20.5)	< 0.001
Advanced neoplasia	167 (9.3)	326 (5.9)	< 0.001	190 (7.3)	98 (4.6)	36 (4.5)	< 0.001
Invasive carcinoma	9 (0.5)	7 (0.1)	0.003	3 (0.1)	2 (0.1)	2 (0.3)	0.553
Diagnostic colonoscopy, n (%)							
Overall neoplasia	166 (36.3)	451 (22.9)	< 0.001	221 (25.7)	147 (23.7)	83 (17.1)	< 0.001
Advanced neoplasia	54 (11.8)	99 (5.0)	< 0.001	54 (6.3)	27 (4.4)	18 (3.7)	< 0.001
Invasive carcinoma	11 (2.4)	13 (0.7)	0.001	5 (0.6)	5 (0.8)	3 (0.6)	0.863

Results IV

Table 3. Risk of Colorectal Neoplasia in Young Age Cohort compared with 50-54s Screening Cohort

	Any neoplasia			Advanced neoplasia		
	No. (%)	OR (95% CI)	*P*	No. (%)	OR (95% CI)	*P*
50-54s screening cohort	648 (36.0)	Ref.	-	167 (9.3)	Ref.	-
Young screening cohort						
45-49 years	780 (30.1)	0.766 (0.674-0.870)	< 0.001	190 (7.3)	0.774 (0.623-0.962) 23%	0.021
40-44 years	524 (24.3)	0.572 (0.498-0.656)	< 0.001	98 (4.6)	0.466 (0.360-0.603) 53%	< 0.001
20-39 years	164 (20.5)	0.458 (0.377-0.558)	< 0.001	36 (4.5)	0.461 (0.318-0.667) 54%	< 0.001
Young diagnostic cohort						
45-49 years	221 (25.7)	0.606 (0.475-0.774)	< 0.001	54 (6.3)	0.500 (0.337-0.743)	0.001
40-44 years	147 (23.7)	0.545 (0.418-0.711)	< 0.001	27 (4.4)	0.340 (0.210-0.549)	< 0.001
20-39 years	83 (17.1)	0.363 (0.268-0.492)	< 0.001	18 (3.7)	0.288(0.166-0.500)	0.001

OR, Odds ratio; CI, Confidence interval

Results V

Table 4. Number needed to screen (NNS) to detect one advanced neoplasia in young and 50-54s screening cohort

Cohorts	Total number, n (%)	Advanced neoplasia, n (%)	NNS (95% CI)
50-54s screening cohort	1800	167 (9.3)	10.8 (9.4-12.6)
Young screening cohort	5544	324 (5.8)	17.1 (15.4-19.2)
45-49 years	2591 (46.7)	190 (7.3)	13.6 (12.0-15.9)
40-44 years	2153 (38.8)	98 (4.6)	22.0 (18.5-27.0)
20-39 years	800 (14.4)	36 (4.5)	22.2 (16.9-32.3)

NNS, Number needed to screen

Results VI

Table 5. Multivariate analyses of the risk of colorectal neoplasia in the young age cohort

Multivariate analysis for neoplasia	Any neoplasia		Advanced Neoplasia	
	Odds ratios (95% CI)	*P*	Odds ratios (95% CI)	*P*
Age groups (<45s vs. 45-49s cohorts)	1.138 (1.235-1.563)	< 0.001	1.689 (1.342-2.124)	< 0.001
Sex (female vs. male)	2.007 (1.734-2.323)	< 0.001	1.810 (1.347-2.433)	< 0.001
Body mass index (< 25 vs. ≥ 25 kg/m^2)	1.200 (1.058-1.360)	< 0.001	1.077 (0.848-1.367)	0.544
Current smoker (no vs yes)	1.228 (1.065-1.416)	0.003	1.551 (1.187-2.205)	0.001
Alcohol consumer (no vs yes)	1.131 (1.988-1.296)	0.075	0.902 (0.695-1.172)	0.441
Diabetes mellitus (no vs yes)	1.016 (0.688-1.501)	0.936	1.178 (0.580-2.394)	0.650
Hypertension (no vs yes)	1.132 (0.881-1.453)	0.332	1.699 (1.131-2.551)	0.011
Protective medication use (no vs yes)	0.915 (0.675-1.241)	0.568	0.593 (0.312-1.128)	0.111

CI, Confidence interval

Conclusions

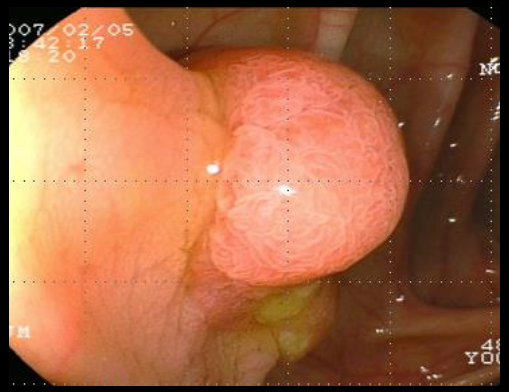
Colonoscopy to detect advanced neoplasia in young adults aged < 50 years should be **reconsidered** as their risk of advanced neoplasia on screening or diagnostic colonoscopy was much lower than those of 50-54s screening cohort, however, colonoscopy screening may be justified for high-risk 45-49s cohorts.

When will you follow-up?

39/Male. Screening colonoscopy. No family history for CRC

When will you perform follow up colonoscopy?

12 mm TA/LGD at ascending colon



Higher risk of metachronous neoplasia in young patients vs.

Lower risk of metachronous neoplasia in young patients

The risk of metachronous neoplasia on surveillance colonoscopy in young patients with colorectal neoplasia

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Aims

To compare the risk of metachronous neoplasia

in young age (20-50s) cohort against

those in 50-54s adults, who represent the youngest

cohort eligible for surveillance colonoscopy,

according to risk stratification of baseline adenoma

characteristics.

Results I

Table 1. Clinical characteristics of young age cohort compared with 50-54s cohort according to surveillance colonoscopy

Characteristics	50-54 age cohort (n=2,237)			Young (20-49) age cohort (n=7,485)		
	Surveillance group (n=1,125)	No surveillance (n=1,112)	*p*	Surveillance group (n=3,058)	No surveillance (n=4,427)	*p*
Age (years), mean ± SD	51.9 ± 1.4	51.9 ± 1.4	0.479	43.3 ± 4.6	43.2 ± 4.5	0.533
Sex (male), n (%)	462 (41.1)	528 (47.5)	0.002	2,013 (65.8)	2,432 (54.9)	< 0.001
BMI (kg/m^2), mean ± SD	23.8 ± 3.2	23.3 ± 2.9	< 0.001	24.1 ± 3.3	23.6 ± 4.9	< 0.001
Smoking, n (%)	248 (22.0)	257 (23.1)	0.546	814 (26.6)	1,179 (26.6)	0.990
Alcohol, n (%)	331 (29.4)	343 (30.8)	0.463	1,276 (41.7)	1,783 (40.3)	0.214
Family history of CRC, n (%)	66 (5.9)	9 (0.8)	< 0.001	161 (5.3)	160 (3.6)	0.001
*Comorbidity, n (%)	279 (24.8)	203 (18.3)	< 0.001	464 (15.2)	522 (11.8)	< 0.001
Diabetes mellitus, n (%)	47 (4.2)	63 (5.7)	0.104	65 (2.1)	86 (1.9)	0.580
Hypertension, n (%)	130 (11.6)	77 (6.9)	< 0.001	180 (5.9)	196 (4.4)	0.005
**Protective medication, n (%)	95 (8.4)	92 (8.3)	0.884	128 (4.2)	149 (3.4)	0.065

BMI, Body mass index; CRC, Colorectal cancer

43% overall surveillance

Results II

Table 2. Baseline colorectal neoplasia in young age cohort compared with 50-54 age cohort

	50-54 age cohort	Young age cohort		Young age cohort			
Colonoscopy group	**50-54s**	**20-49s**	***p***	**45-49s**	**40-44s**	**20-39s**	***p***
Overall colonoscopy, n (%)	2237 (23.0)	7485 (77.0)		3442 (46.0)	2765 (36.9)	1278 (17.1)	
Any adenoma	805 (36.0)	1904 (25.4)	< 0.001	995 (28.9)	666 (24.1)	243 (19.0)	< 0.001
Low-risk adenoma	495 (22.1)	1374 (18.3)	< 0.001	688 (20.0)	506 (18.3)	180 (14.1)	< 0.001
High-risk adenoma	310 (13.9)	530 (7.1)	< 0.001	307 (8.9)	160 (5.8)	63 (4.9)	< 0.001
Screening colonoscopy, n (%)	1791 (80.1)	5536 (74.0)		2587(75.2)	2151 (77.8)	798 (62.4)	
Any adenoma	648 (36.2)	1466 (26.5)	< 0.001	779 (30.1)	524 (24.4)	163 (20.4)	< 0.001
Low-risk adenoma	403 (22.5)	1045 (18.9)	< 0.001	533 (20.6)	394 (18.3)	118 (14.8)	< 0.001
High-risk adenoma	245 (13.7)	421 (7.6)	< 0.001	246 (9.5)	130 (6.0)	45 (5.6)	< 0.001
Diagnostic colonoscopy, n (%)	446 (19.9)	1949 (26.0)		855 (24.8)	614 (22.2)	480 (37.6)	
Any adenoma	157 (35.2)	438 (22.5)	< 0.001	216 (25.3)	142 (23.1)	80 (16.7)	< 0.001
Low-risk adenoma	92 (20.6)	329 (16.9)	< 0.001	155 (18.1)	112 (18.2)	62 (12.9)	< 0.001
High-risk adenoma	65 (14.6)	109 (5.6)	< 0.001	61 (7.1)	30 (4.9)	18 (3.8)	< 0.001

Results III

Table 3. Cumulative risk of metachronous neoplasia in young age cohort compared with those in 50-54s cohort according to baseline risk stratification

	50-54 age cohort	Young age cohort		Young age cohort			
Baseline risk stratification	50-54s	20-49s	P	45-49s	40-44s	20-39s	P
Baseline HRA group							
Number	330	553		308	161	64	
Surveillance colonoscopy, n (%)	184 (59.4)	336 (63.0)	0.289	194 (63.0)	98 (60.9)	44 (68.8)	0.507
Surveillance colonoscopy ≤ 3yr	80 (43.5)	122 (36.9)	0.109	73 (37.6)	33 (33.7)	16 (36.4)	0.391
Surveillance colonoscopy > 3yr	104 (56.5)	214 (63.1)		121 (62.4)	65 (66.3)	28 (63.6)	
3-year risk of metachronous neoplasia, n (%)							
Non-advanced neoplasia	31 (38.8)	48 (39.3)	0.988	31 (42.5)	12 (36.4)	5 (31.3)	0.835
Advanced neoplasia	7 (8.8)	14 (11.5)	0.554	10 (13.7)	3 (9.1)	1 (6.3)	0.705
Baseline LRA group							
Number	495	1374		688	506	180	
Surveillance colonoscopy, n (%)	295 (59.6)	798 (58.1)	0.557	407 (59.2)	283 (55.9)	108 (60.0)	0.591
Surveillance colonoscopy ≤ 5yr	198 (67.1)	565 (70.8)	0.239	284 (69.8)	207 (73.1)	74 (68.5)	0.459
Surveillance colonoscopy > 5yr	97 (32.9)	233 (29.2)		123 (30.2)	76 (26.9)	34 (31.5)	
5-year risk of metachronous neoplasia, n (%)							
Non-advanced neoplasia	149 (50.5)	325 (40.7)	0.004	184 (45.2)	109 (38.5)	32 (29.6)	0.001
Advanced neoplasia	15 (5.1)	39 (4.9)	0.894	26 (6.4)	12 (4.2)	1 (0.9)	0.101

Results IV

Table 3. Cumulative risk of metachronous neoplasia in young age cohort compared with those in 50-54s cohort according to baseline risk stratification

	50-54 age cohort	Young age cohort		Young age cohort			
Baseline risk stratification	**50-54s**	**20-49s**	***p***	**45-49s**	**40-44s**	**20-39s**	***p***
No neoplasia group							
Number	1432	5581		2447	2099	1035	
Surveillance colonoscopy, n (%)	646 (45.1)	1926 (34.5)	0.000	842 (34.4)	662 (31.5)	422 (40.8)	0.000
Surveillance colonoscopy ≤ 5yr	385 (59.6)	1193 (61.9)	0.290	517 (61.4)	421 (63.6)	255 (60.4)	0.494
Surveillance colonoscopy > 5yr	261 (40.4)	733 (38.1)		325 (38.6)	241 (36.4)	167 (39.6)	
5-year risk of metachronous neoplasia, n (%)							
Non-advanced neoplasia	185 (28.6)	420 (21.8)	0.000	216 (25.6)	150 (22.7)	54 (12.8)	0.000
Advanced neoplasia*	36 (5.6)	79 (4.1)	0.117	48 (5.7)	23 (3.5)	8 (1.9)	0.005

*No carcinoma was detected on surveillance colonoscopy in advanced neoplasia, regardless of the baseline risk stratification group.

Results V

Table 4. Multivariate analyses for the risk factors of metachronous neoplasia on surveillance colonoscopy

Risk factors	Metachronous neoplasia		Metachronous advanced neoplasia	
	Odds ratios (95% CI)	*p*	Odds ratios (95% CI)	*p*
Age groups (young age vs 50-54 age cohort)	1.624 (1.378-1.914)	0.000	1.504 (1.090-2.075)	0.013
Sex (female vs male)	1.979 (1.652-2.372)	0.000	1.955 (1.330-2.874)	0.001
Body mass index (< 25 vs. ≥ 25 kg/m^2)	1.177 (1.008-1.375)	0.039	0.914 (0.662-1.261)	0.585
Current smoker (no vs yes)	1.426 (1.191-1.707)	0.000	1.161 (0.804-1.677)	0.425
Alcohol consumer (no vs yes)	1.321 (1.112-1.569)	0.002	0.920 (0.646-1.311)	0.644
Diabetes mellitus (no vs yes)	0.863 (0.565-1.319)	0.495	0.770 (0.307-1.931)	0.577
Hypertension (no vs yes)	1.111 (0.854-1.446)	0.432	1.000 (0.584-1.715)	0.999

Conclusions

Considering the similar risk of metachronous advanced neoplasia in young age cohort to those in 50-54s cohort,

a 3-year surveillance interval for high-risk adenoma &

a 5-year surveillance interval for low-risk adenoma

may be recommended for young individuals without a strong family history.

Summary

1. Colonoscopy to detect advanced neoplasia in young adults aged < 50 years should be reconsidered as their risk of advanced neoplasia on screening colonoscopy was much lower than those of 50-54s screening cohort.
2. Considering the similar risk of metachronous advanced neoplasia in younger and older individuals, 3-year surveillance interval for HRA and a 5-year surveillance interval for LRA may be recommended in young individuals without a strong family history.

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Asian Pacific Digestive Week

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Save the Date

Abstract Submission Open	January, 2018
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