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Colonoscopy quality Perspective from outside North America

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Disclosure of Conflicts of Interest

There are no conflicts of interest to be disclosed.



Agenda

1. Current Situation of CRC screening and Colonoscopy in Asia
2. Possibly Important Factors for Colonoscopy Quality from the Asian (Japanese) perspective



Agenda

1. Current Situation of CRC screening and Colonoscopy in Asia
2. Possibly Important Factors for Colonoscopy Quality from the Asian (Japanese) perspective



Colorectal Cancer Screening in Asia

Country/Region	Launch Year	Age of Target Population (years old)	Screening Test in Population-based Screening	
Japan	1992	≥40	FIT	Annual, 2 day
South Korea	2004	≥50	FIT	Annual, 1 day
Taiwan	2004	50-74	FIT	Biannual, 1 day
Singapore	2011	≥50	FIT	Annual, 2 day
Hong Kong	2018 (pilot 2016)	50-75	FIT	Biannual, 1 day
Thailand	2017 (pilot 2014)	50-70	FIT	One time, 1 day

✓ Total colonoscopy is used as the primary exam only in the opportunistic screening.

Ref) Lui RN, Wong SH, Ding NS, Sekiguchi M, Yu J, Ang TL, Yeoh KG, Chiu HM, Sung JY. Is this the end of colonoscopy screening for colorectal cancer? An Asia-Pacific perspective. J Gastroenterol Hepatol. 2023; 38: 671-77.



Colonoscopy for FIT+ in Population-based Screening in Asia

Country/Region	Any special regulations for endoscopists such as experience of colonoscopy?		Government Financial Support (Medical Reimbursement etc.)	Cost for a colonoscopy procedure (USD: exchange rate on April 23, 2024)
Japan	No	JGES has started the certification system requiring experience of ≥ 300 colonoscopies	Yes	100 (323-452 with polypectomy)
South Korea	No	Usually gastroenterologists and surgeons	Yes	87 (145 with polypectomy)
Taiwan	No	Usually gastroenterologists and surgeons	Yes	125 for FIT+ (73 for others)
Singapore	No	Usually gastroenterologists and surgeons	Yes	954 (3083 with polypectomy)
Hong Kong	No	Gastroenterologist and General Surgeon	Yes	≈ 1276
Thailand	No	Usually certified surgeon or gastroenterologist with experience of ≥ 100 colonoscopies	Yes	(complicated)

● No nurse endoscopists

Ref) Sekiguchi M, Westerberg M, Ekblom A, Hultcrantz R, Forsberg A (SCREESCO). Gastroenterology. 2023 Feb;164(2):293-295.e4.

Based on personal communications with Drs. Wen-Feng Hsu, Han-Mo Chiu, Chang Mo Moon, Jonathan Lee Wei Jie, Rashid N Lui, Supakij Khomvilai, and Takahisa Matsuda.



Management System of Colonoscopy Quality in Asia

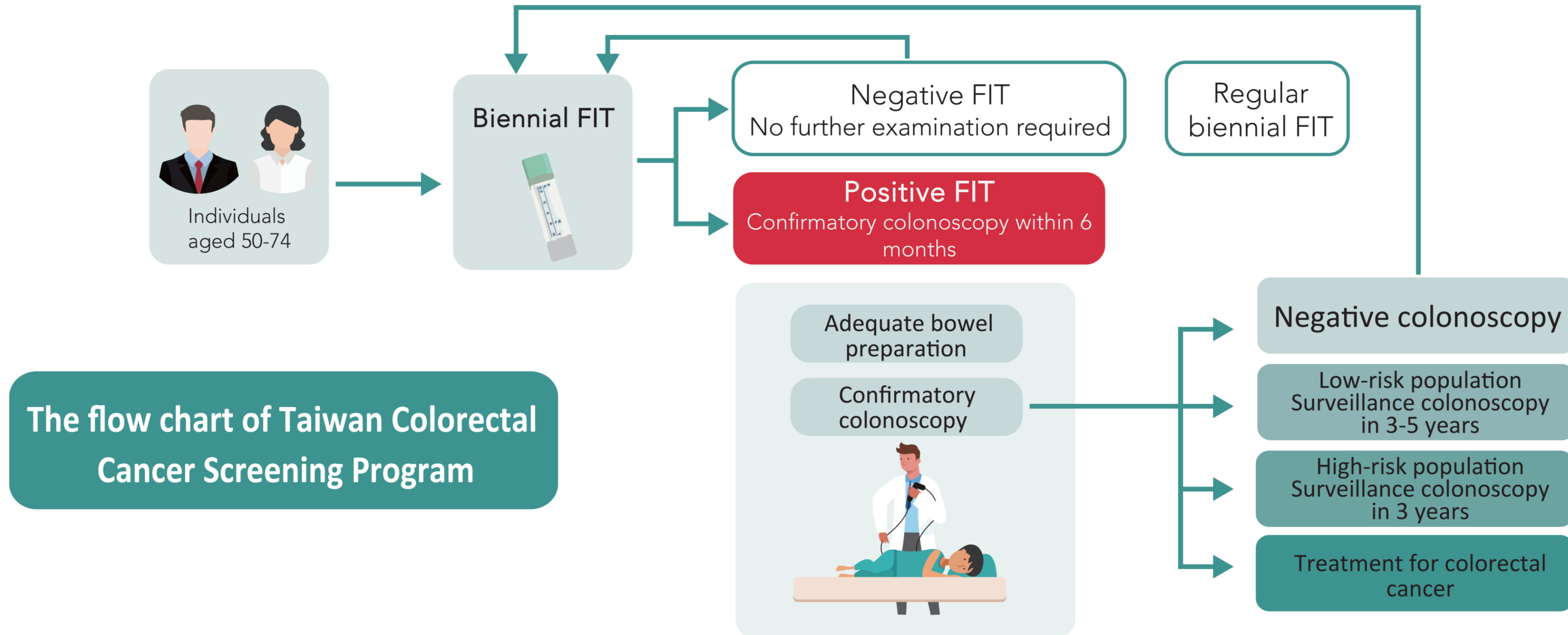
Country/Region	Does the country/region have its own guidelines or documents on colonoscopy quality indicators?		Nationwide standardized format for colonoscopy reports?	Nationwide system of monitoring colonoscopy quality?	Nationwide feedback system of colonoscopy quality to intuitions?	Nationwide feedback system of colonoscopy quality to endoscopists?
Japan	Yes	Colonoscopy screening and surveillance guidelines (JGES). Dig Endosc. 2021;33: 486-519.	No	No	No	No
South Korea	No	Referring to US guidelines	No	No	No	No
Taiwan	Yes	The Taiwan Guideline for CRC Screening. URL: https://www.dest.org.tw/DB/News/file/501-2.pdf	Yes (for population-based screening)	Yes (for population-based screening)	Yes (for population-based screening)	Yes (for population-based screening)
Singapore	No	Referring to US guidelines	No	No	No	No
Hong Kong	No	Referring to US and AP guidelines	No	No	No	No
Thailand	No	—	No	No	No	No

Based on personal communications with Drs. Wen-Feng Hsu, Han-Mo Chiu, Chang Mo Moon, Jonathan Lee Wei Jie, Rashid N Lui, Supakij Khomvilai, and Takahisa Matsuda.



Taiwan

Ref) The Taiwan Guideline for CRC Screening.



The flow chart of Taiwan Colorectal Cancer Screening Program

Quality assessment of colonoscopy

- Adenoma detection rate
- Rate of adequate bowel preparation
- Cecal intubation rate

Standardized colonoscopy reporting

Low-risk populations:
1-2 adenomas that are smaller than 1 cm, without pathological findings of adenoma with tubulovillous/villous histology and without high-grade dysplasia

High-risk populations:
(1) Three or more colorectal adenomas
(2) Adenoma greater than 1 cm
(3) Pathological findings of adenoma with tubulovillous/villous histology or high-grade dysplasia



Taiwan

Table 3. Benchmarks of colonoscopy quality indicators in the Taiwan Colorectal Cancer Screening Program
Ref) The Taiwan Guideline for CRC Screening.

Indicator	Criteria
Rate of adequate bowel preparation (Aronchick scale: good or above)	≥ 90%
Cecal intubation rate	≥ 95%
Withdrawal time: 6 minutes or more	≥ 90%
Adenoma detection rate (for FIT+)	≥ 40%
Complete polypectomy rate	≥ 90%
Sample retrieval rate	≥ 90%



Taiwan

Courtesy of Dr. Wen-Feng HSU (National Taiwan University Hospital)

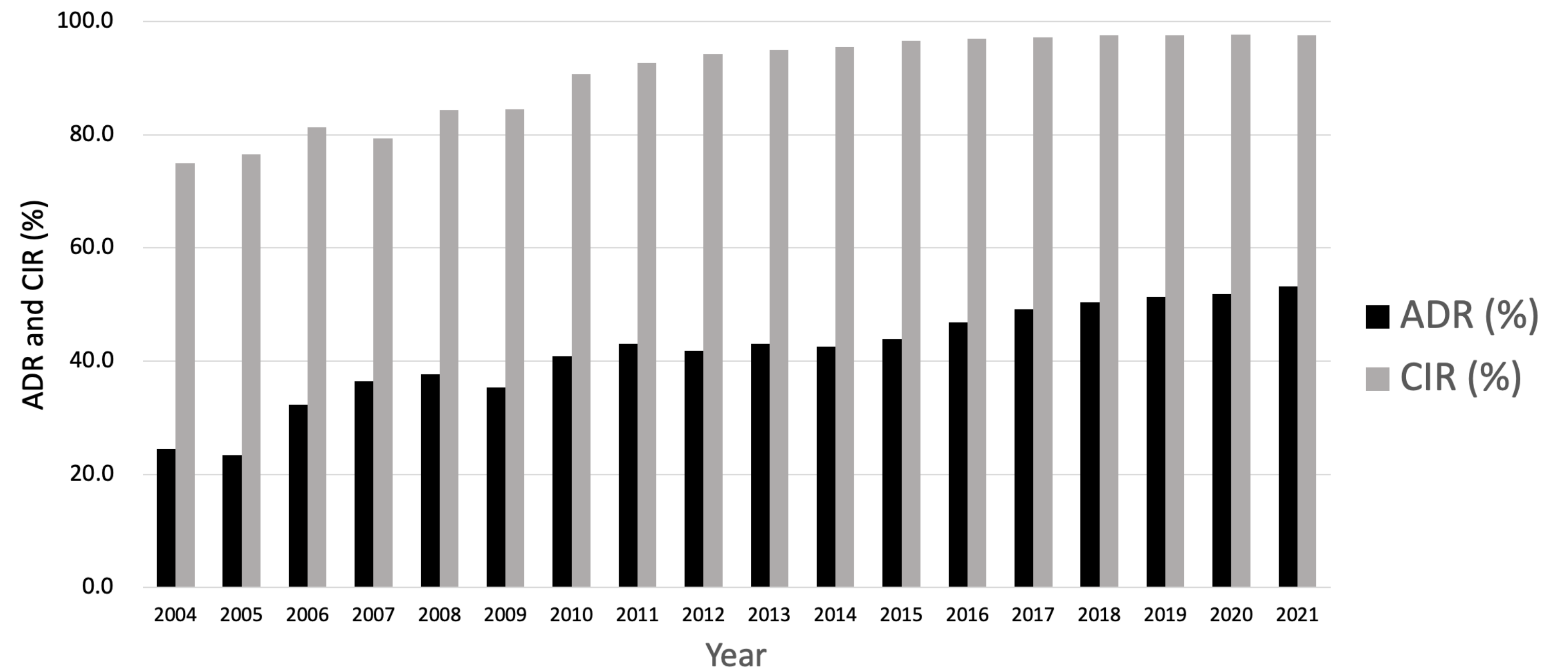
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Current actual value
 based on the nationwide data

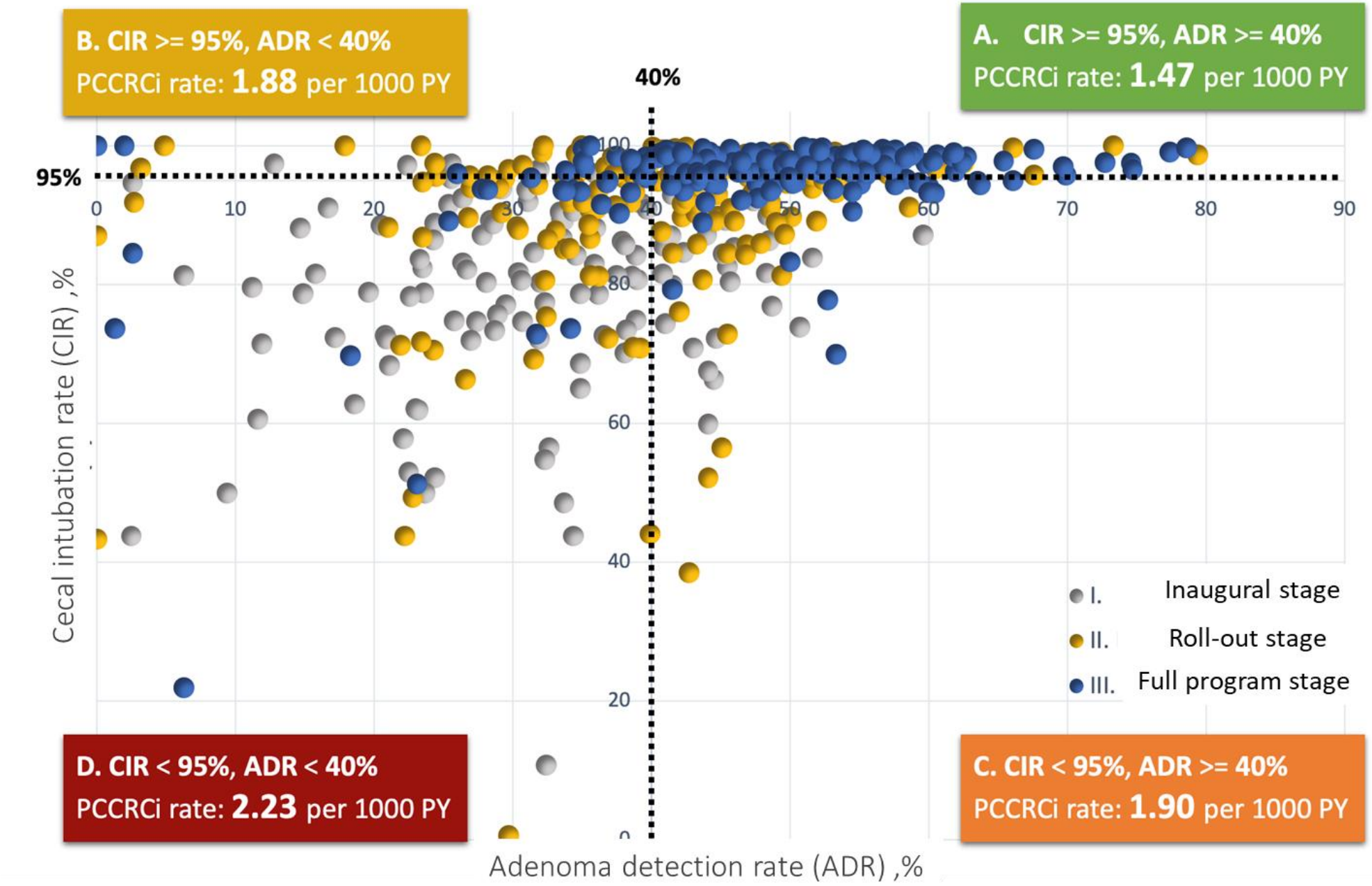
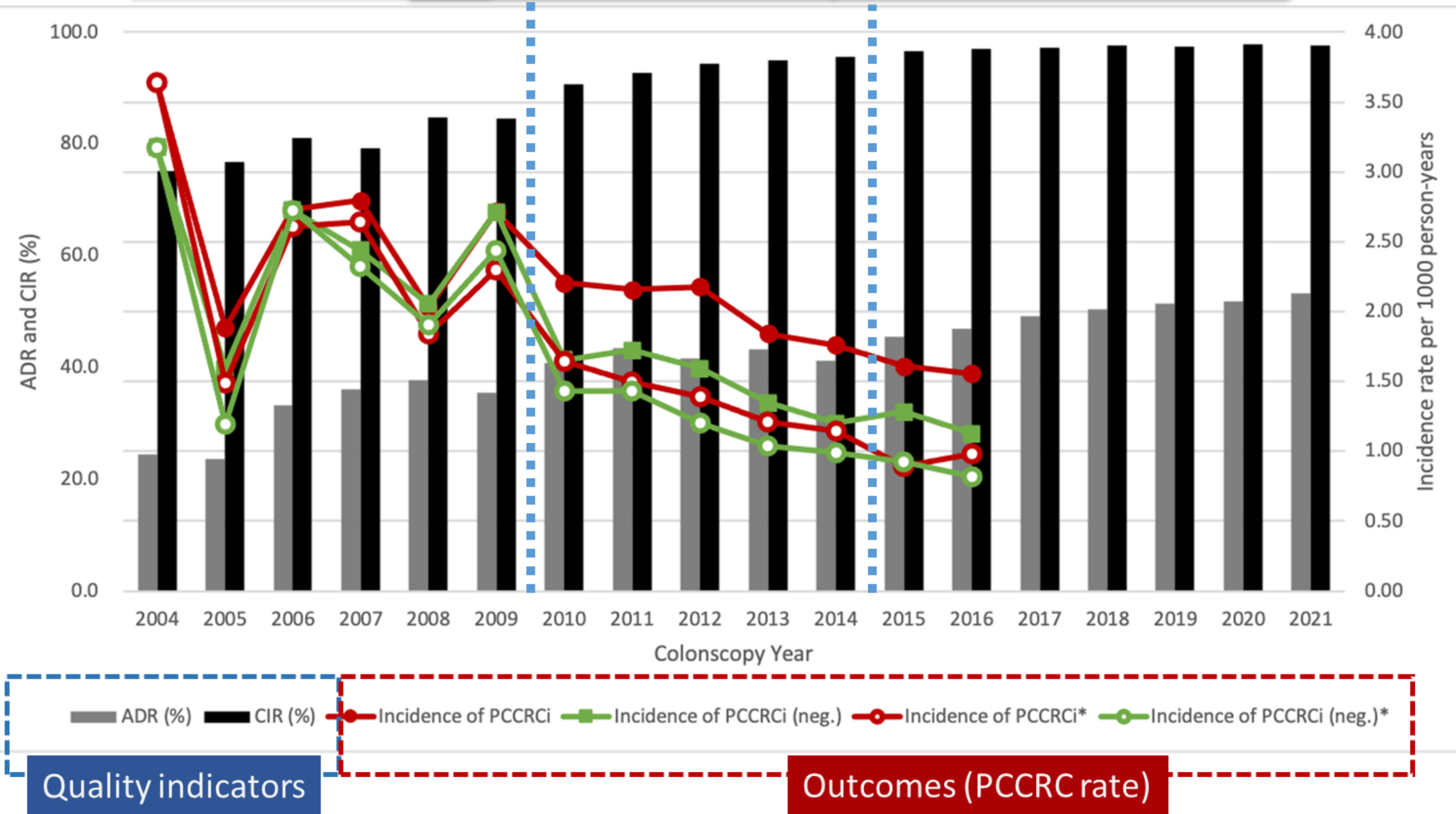
97.2%

51%



Taiwan

Courtesy of Prof. Han-Mo Chiu (National Taiwan University Hospital)



Importance of monitoring and feedback of colonoscopy quality indicated by the reduced PCCRC rate.



Japan

- Japan Gastroenterological Endoscopy Society (JGES) tries to establish the nationwide endoscopy database.

Japan Endoscopy Database (JED)

<https://jedproject.jges.net/>

- JGES initiated the system of “certified endoscopists for screening endoscopies” in 2022.

Requirements for certified endoscopists who can perform screening colonoscopy

- Experience of ≥ 300 colonoscopy procedures (From 2025, ≥ 500)
- Hands-on seminars and lectures

etc.



Ref) Matsuda K, Tanaka K, Fujishiro M, et al. Dig Endosc. 2018; 30: 5-19.

Saito Y, Kodashima S, Matsuda T, et al. Dig Endosc. 2022; 34: 144-152. *etc.*



<https://www.jges.net/screening>



Japan

J-SCOUT Study

Ref) Kawamura T, Sekiguchi M, et al. Dig Endosc. 2023; 35: 615-24. Kawamura T, Sekiguchi M, et al. Dig Endosc. 2024; 36: 51-8.

- ✓ The “J-SCOUT” study is a multicenter observational study in Japan aiming to elucidate factors affecting colonoscopy outcomes by using a large database that included findings of colonoscopy and corresponding pathology results.

Data from adult individuals who had undergone colonoscopy at eight participating institutions across Japan between 2010 and 2020 were analyzed.

Participating institutions

- ◆ Kyoto Second Red Cross Hospital
- ◆ National Cancer Center Hospital, Tokyo
- ◆ National Cancer Center Hospital East
- ◆ Osaka International Cancer Institute
- ◆ Oda GI Endoscopy and Gastroenterology Clinic
- ◆ Kitasato University
- ◆ Kyoto University
- ◆ Shizuoka Medical Center
- ◆ The Jikei University Katsushika Medical Center
- ◆ The University of Tokyo



Japan

J-SCOUT Study

Ref) Kawamura T, Sekiguchi M, et al. Dig Endosc. 2023; 35: 615-24. Kawamura T, Sekiguchi M, et al. Dig Endosc. 2024; 36: 51-8.

186,293 cases of colonoscopy procedures performed for the study participants aged ≥ 20 years at the eight participating institutions between April 2010 and March 2020 in the J-SCOUT study

Exclusion (with overlap in the following conditions)

- ✓ Cases of colonoscopy procedures performed within six months after the prior colonoscopy (n=31,533)
- ✓ Cases of colonoscopy procedures performed for identified colorectal lesions (n=25,190)
- ✓ Cases of emergency colonoscopy procedures (n=1,873)
- ✓ Cases of colonoscopy procedures performed for participants with inflammatory bowel disease (n=9,910)

129,065 cases of colonoscopy procedures analyzed

ADR (based on pathological diagnoses): 32.7% (95%CI: 32.5–33.0)



Japan

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Underestimated value

◆ The Japanese guidelines allow diminutive benign adenomas $< 5\text{mm}$ to be left unresected (with the diagnosis using magnifying IEE). Ref) Saito Y, ---, Sekiguchi M, ---, et al. Colonoscopy screening and surveillance guidelines. Dig Endosc. 2021; 33: 486-519. Sekiguchi M, et al. Am J Gastroenterol. 2019; 114: 964-973.

◆ Due to relatively easy access to colonoscopies in Japan, polyps may not be removed at the time of examination and left for treatment on another day.



Japan

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Ref) Kawamura T, Sekiguchi M, et al. Dig Endosc. 2023; 35: 615-24. Kawamura T, Sekiguchi M, et al. Dig Endosc. 2024; 36: 51-8.

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129,065 cases of colonoscopy procedures analyzed

Exclusion (with overlap in the following conditions)

- ✓ Cases of colonoscopy procedures performed for unknown indications
- ✓ Cases of colonoscopies from 4 hospitals that had a policy of leaving adenomas < 5 mm or usually not performing polypectomy on site

47,705 cases of colonoscopy procedures analyzed



Japan

J-SCOUT Study

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Table 3 Adenoma detection rates by colonoscopy indications

	N	ADR (%)	95% CI
Overall	47,705	38.3	(37.8, 38.7)
Indications			
Screening; asymptomatic, prior FIT unavailable	11,339	38.1	(37.2, 39.0)
Positive FIT		42.2	(41.1, 43.2)
Bloody stool	3434	30.0	(28.5, 31.6)
Temporary abdominal symptoms	4969	25.5	(24.3, 26.7)
Surveillance after surgery for CRC	4889	34.2	(32.9, 35.6)
Surveillance after endoscopic polypectomy	8687	46.2	(45.2, 47.3)
Others	5212	39.9	(38.6, 41.3)

ADR, adenoma detection rate; CI, confidence interval; CRC, colorectal cancer; FIT, fecal immunochemistry test.



Japan

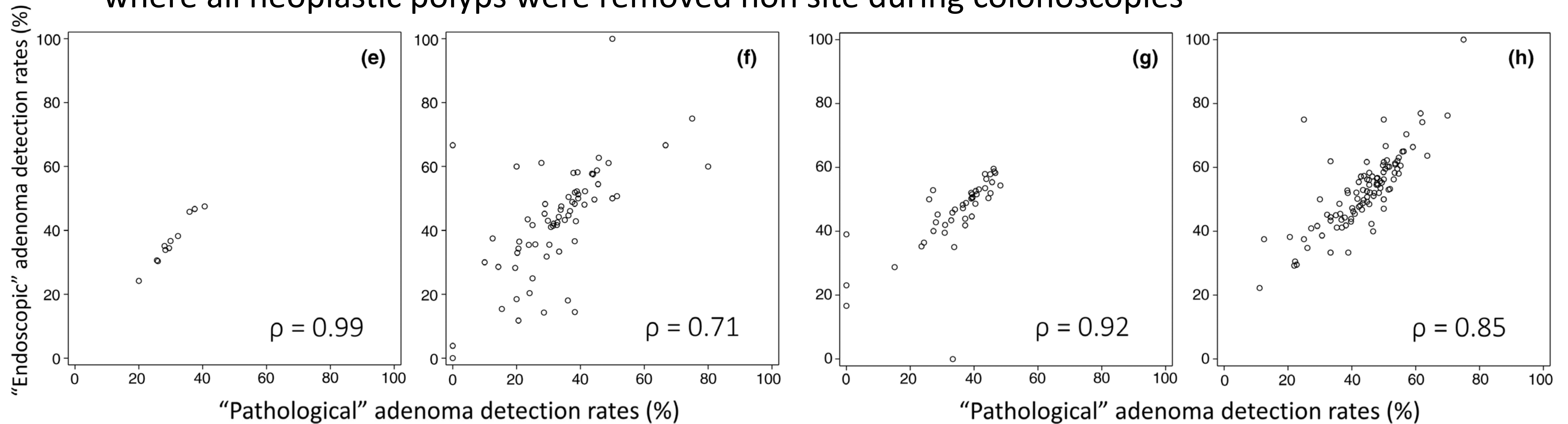
J-SCOUT Study

Ref) Kawamura T, Sekiguchi M, et al. Dig Endosc. 2023; 35: 615-24. Kawamura T, Sekiguchi M, et al. Dig Endosc. 2024; 36: 51-8.

In the setting in which “diagnose-and-do-not-resect” strategy and “resect-and-discard” strategy are allowed for diminutive benign adenomas, the correct evaluation of “pathological” ADR is difficult.

Proposal of “endoscopic ADR” (using (magnifying) IEE))

Strong correlation between pathological ADR and endoscopic ADR confirmed in institutions where all neoplastic polyps were removed non site during colonoscopies

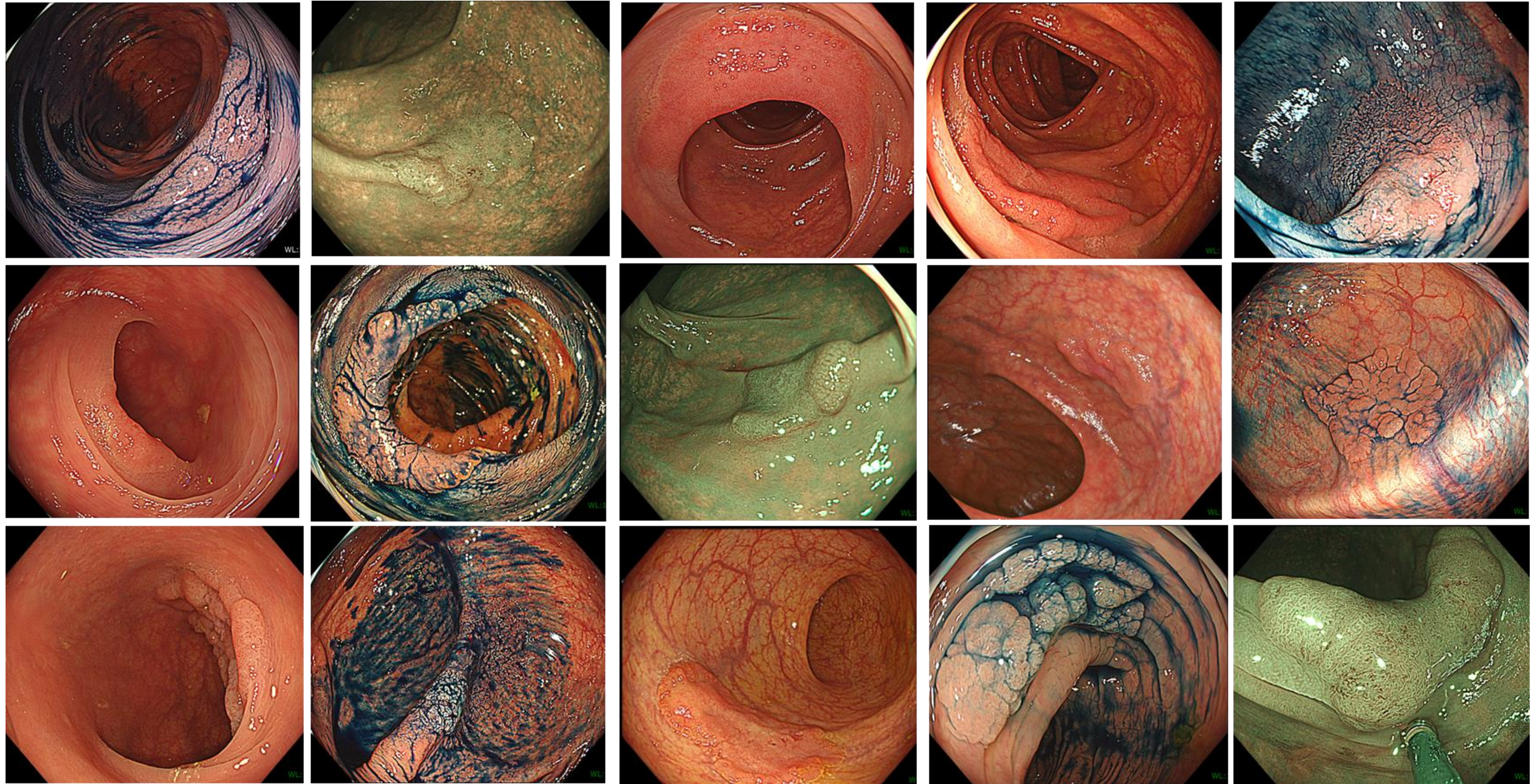


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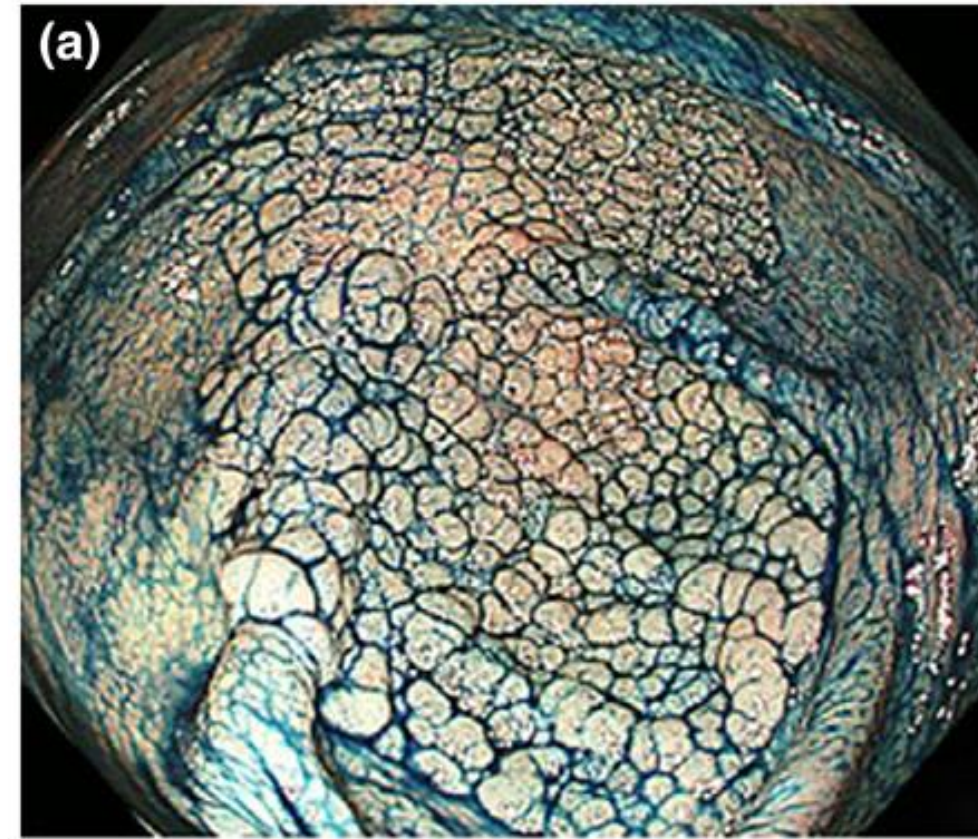


Detection of Flat Lesions

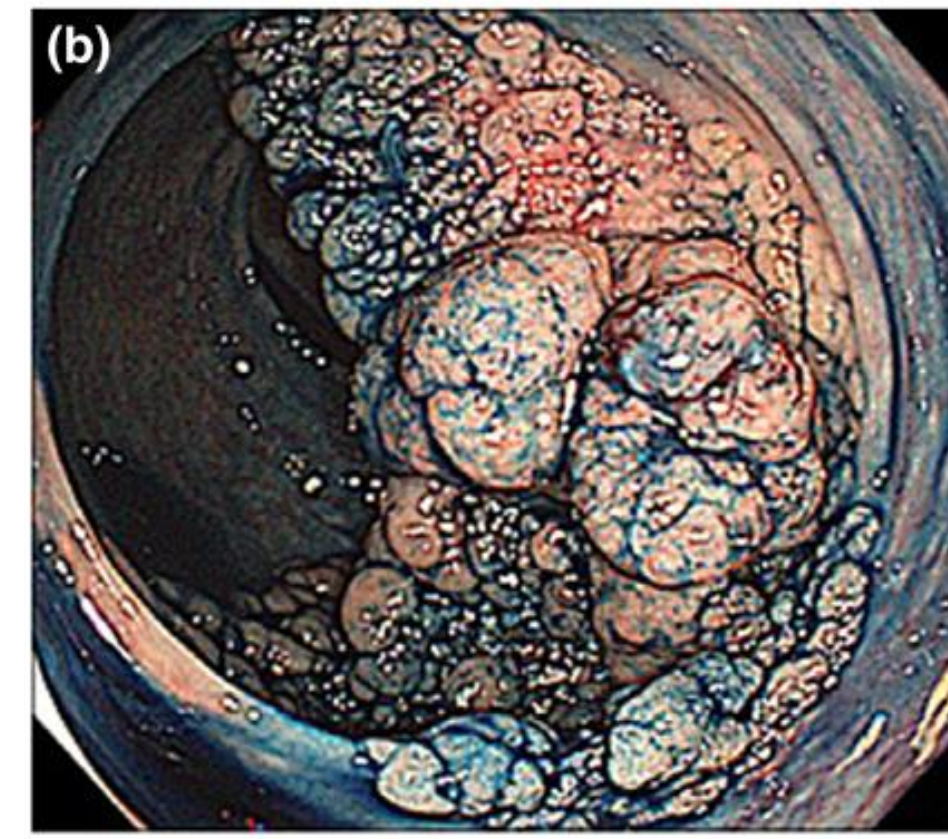


Flat Lesions: Laterally Spreading Tumor (LST)

LST-G (granular type)

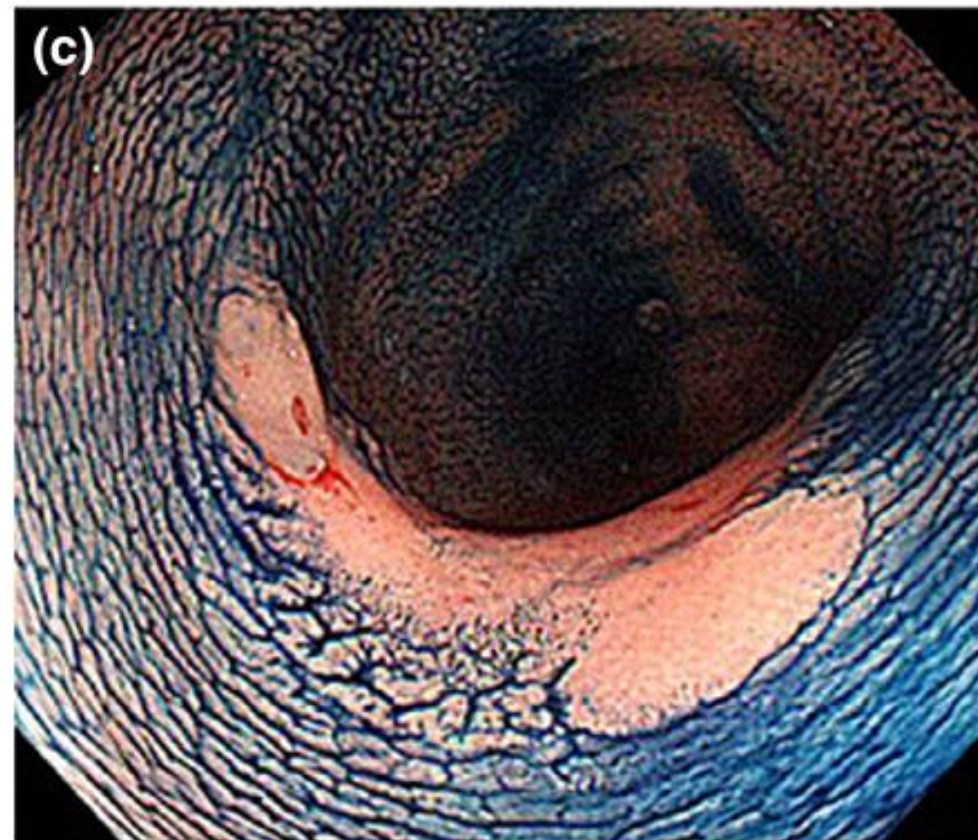


Homogeneous type (LST-GH)

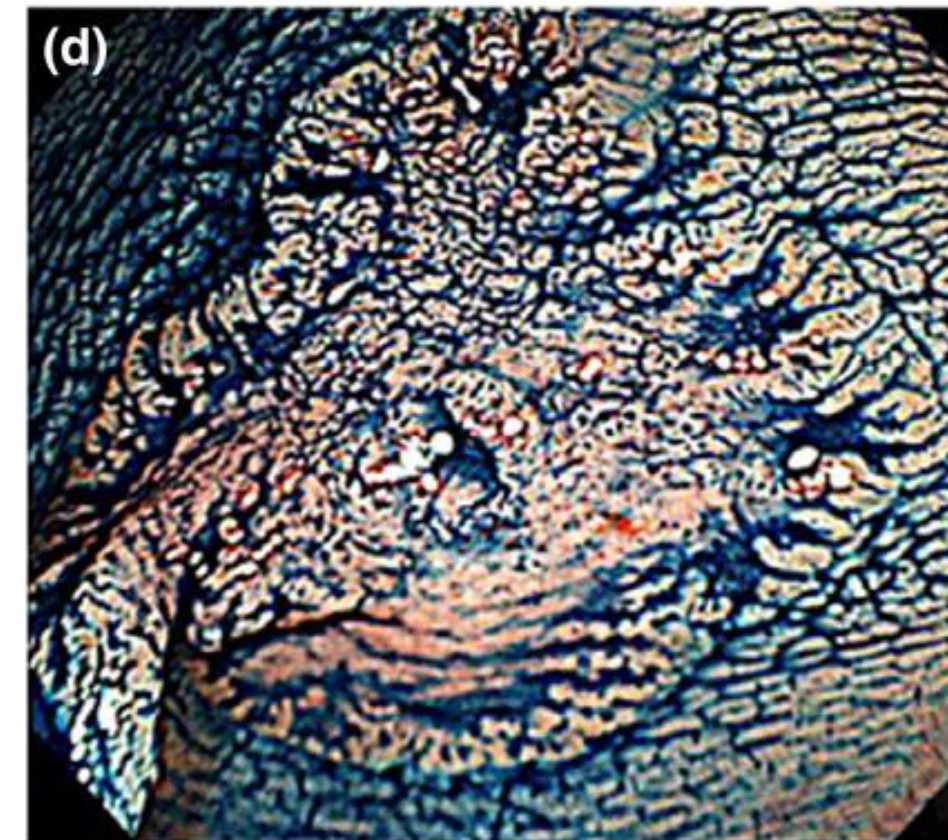


Nodular mixed-type (LST-GM)

LST-NG (nongranular type)



Flat-elevated-type



Pseudo-depressed type

Ref) Digestive Endosc
2020; 32: 219-39



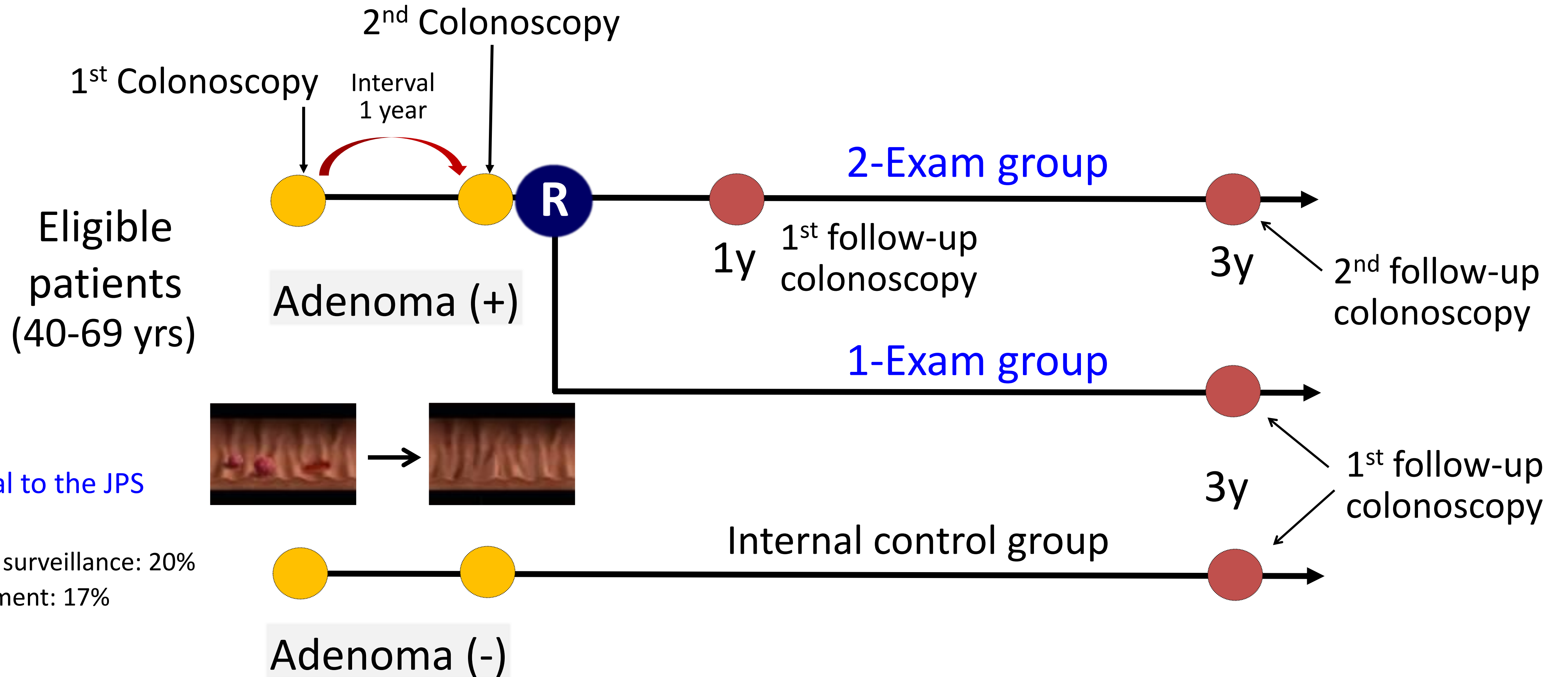
Japan Polyp Study (JPS)

Multicenter Randomized Control Trial
(conducted at 11 Participating Centers)



JPS Study Design

Ref) Matsuda T, Fujii T,---, Sekiguchi M,---, Yoshida S, et al. Gut 2020; 70: 1469–78.

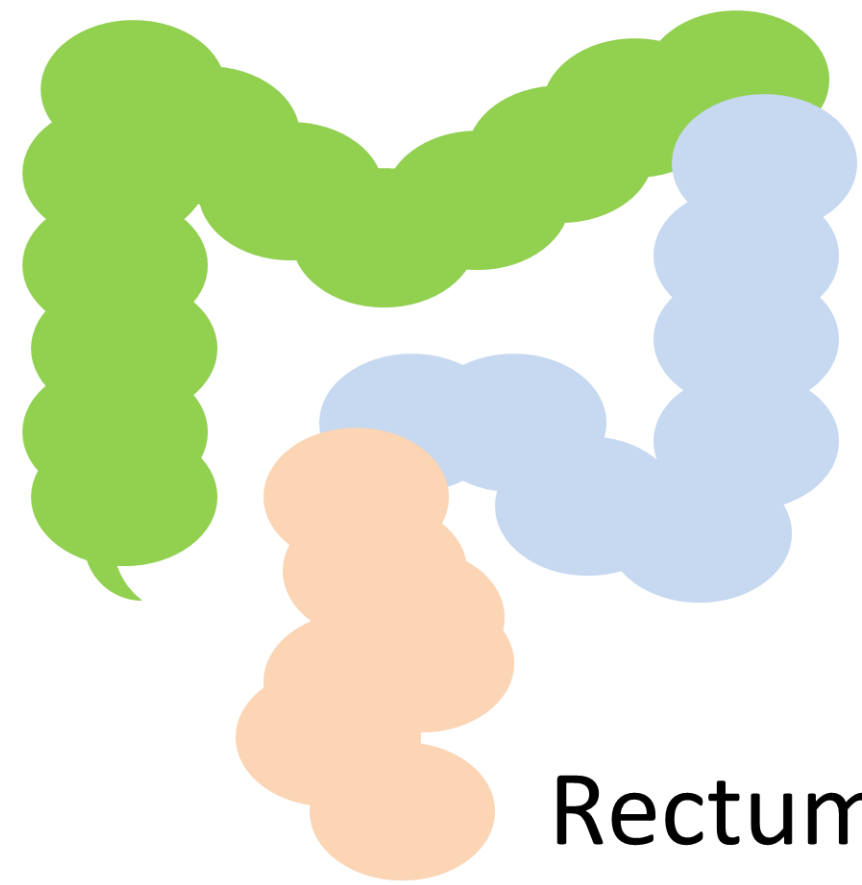


Characteristics of Metachronous Advanced Neoplasia

(29 ANs in 28 Patients)

Location

Rt-colon: **45%**



Lt-colon: **38%**

Rectum: **17%**

Pathology

- Invasive Cancer: 1 (3.4%)
- High-grade dysplasia: 13 (44.8%)
- Low-grade dysplasia \geq 10 mm: 15 (51.7%)

Morphology

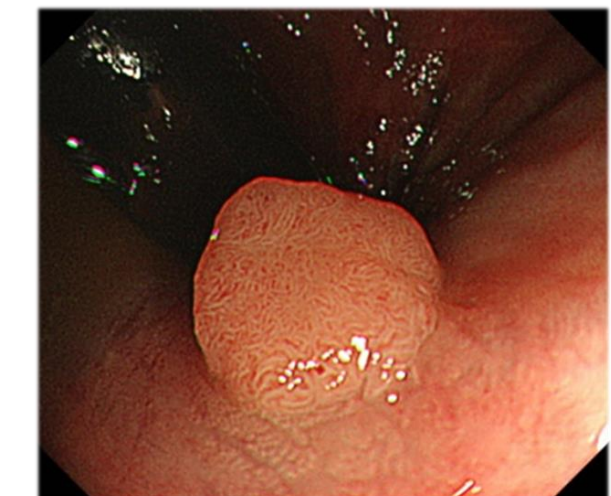
Nonpolypoid
CRNs: **62%**



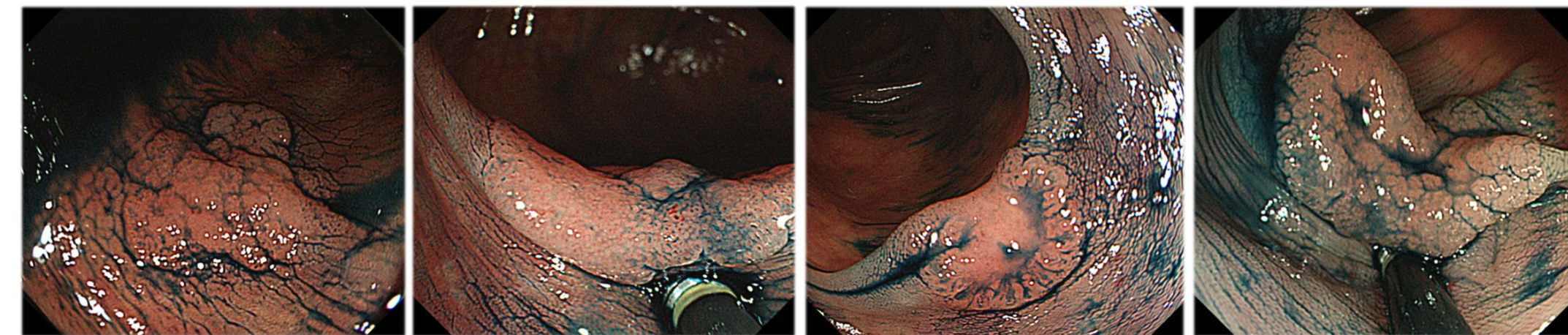
LST-NG: **83%**



Nonpolypoid



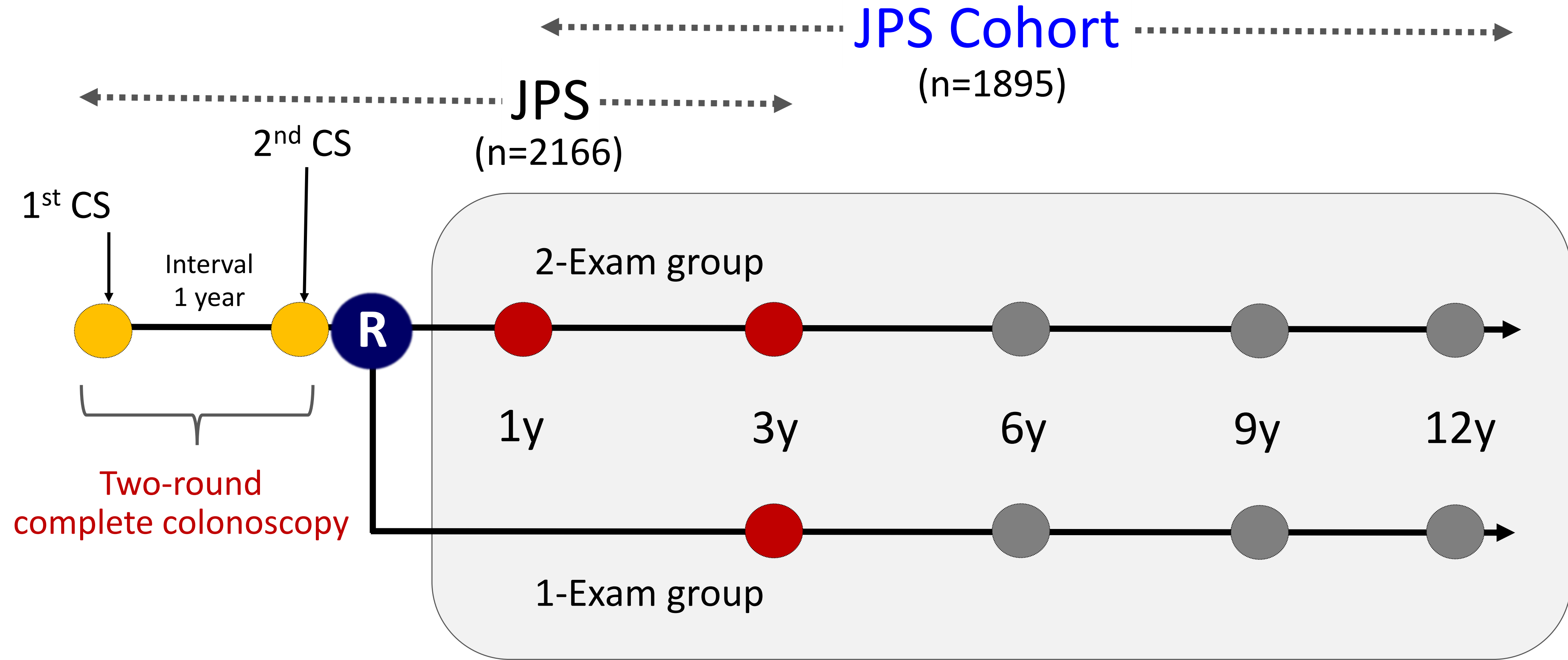
Polypoid





JPS Cohort

Ref) Sano Y, Hotta K, Matsuda T,---, Sekiguchi M,---, Yoshida S, et al. Clin Gastroenterol Hepatol. 2024; 22: 542-51.



Target colonoscopies of the JPS cohort study

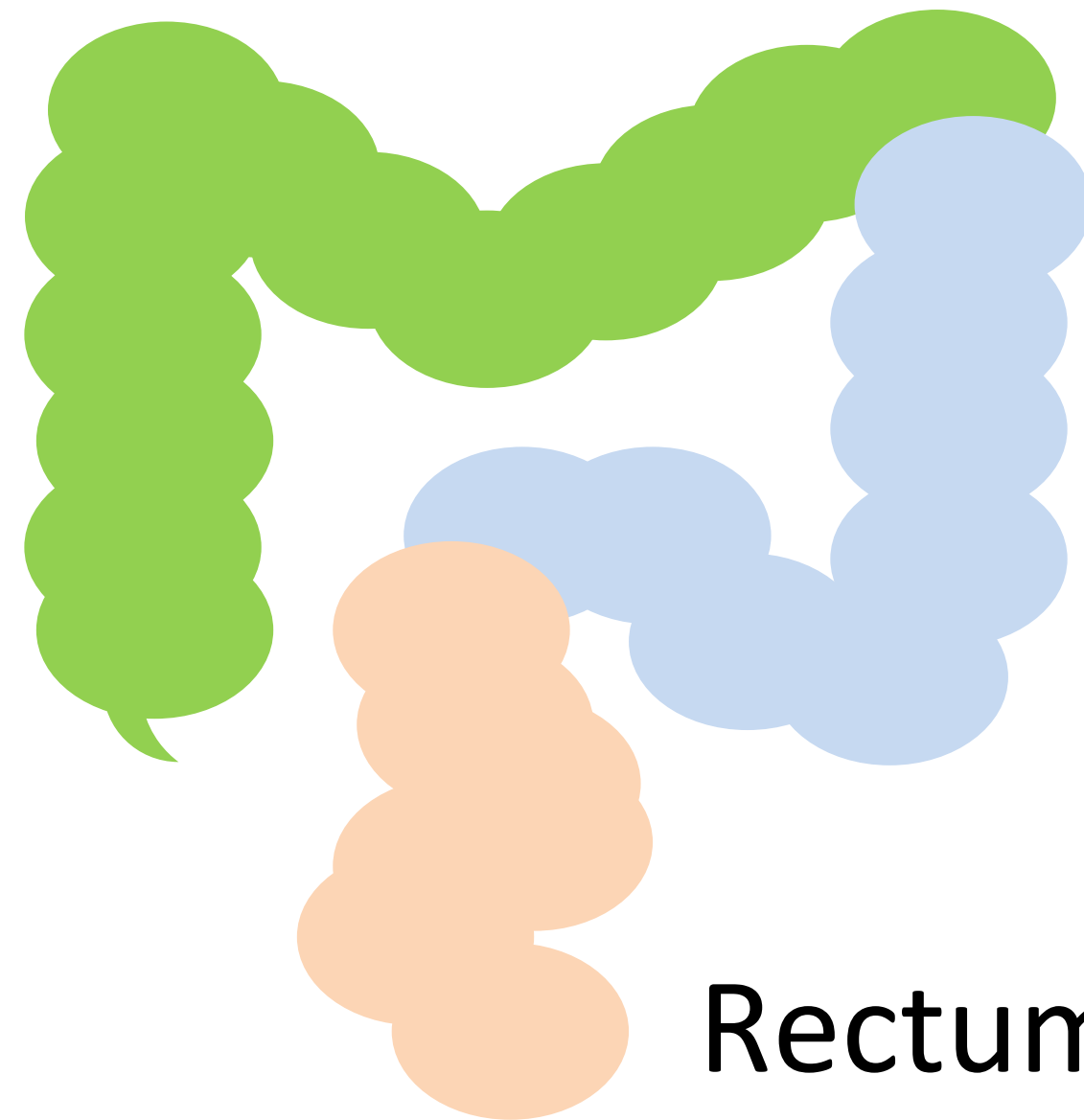


Metachronous Advanced Neoplasia Detected after Two-round Colonoscopy

(77ANs in 71 Pts)

Location

Rt-colon: **57%**

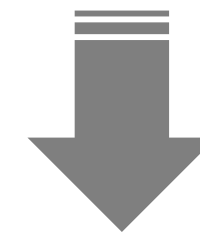


Lt-colon: **30%**

Rectum: **13%**

Morphology

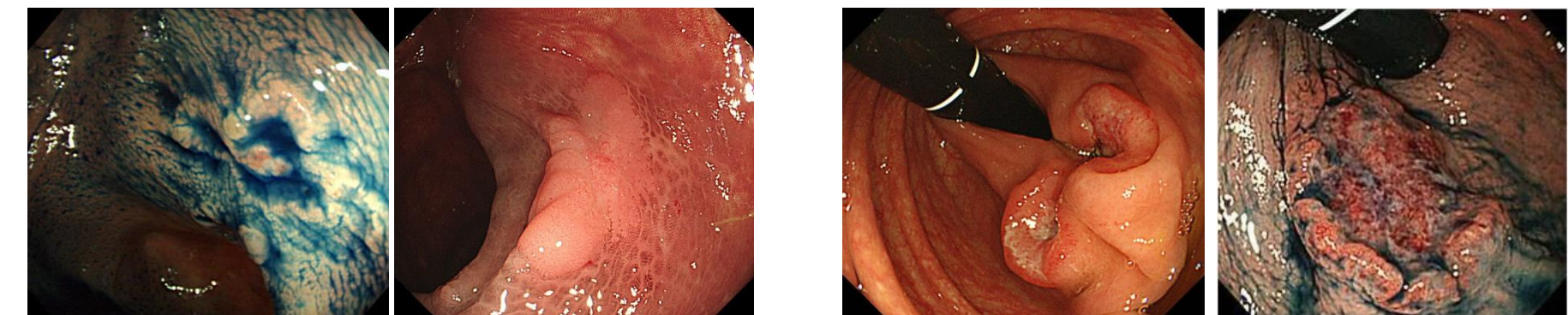
NPCRNs: **60%** (46/77)



LST-NG: **67%**

Pathology

- Low-grade dysplasia: 36 (47%)
- High-grade dysplasia: 37 (48%)
- T1: 2 (2.6%), >T2: 2 (2.6%)



Detection of Flat Lesions

◆ FDR (Flat Adenoma Detection rate)

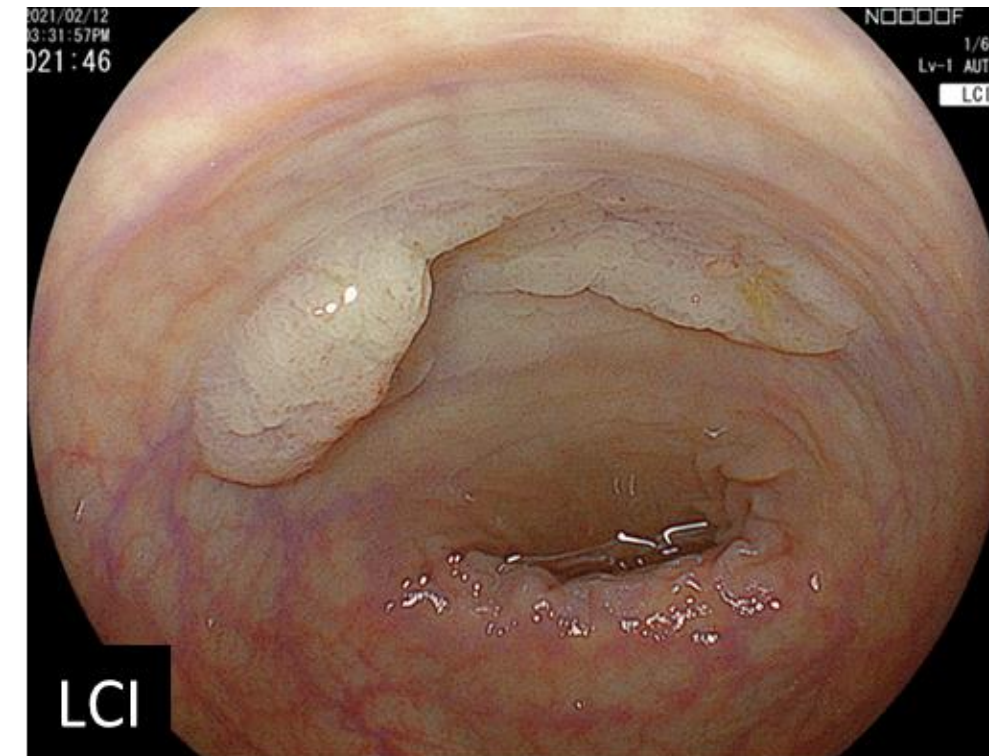
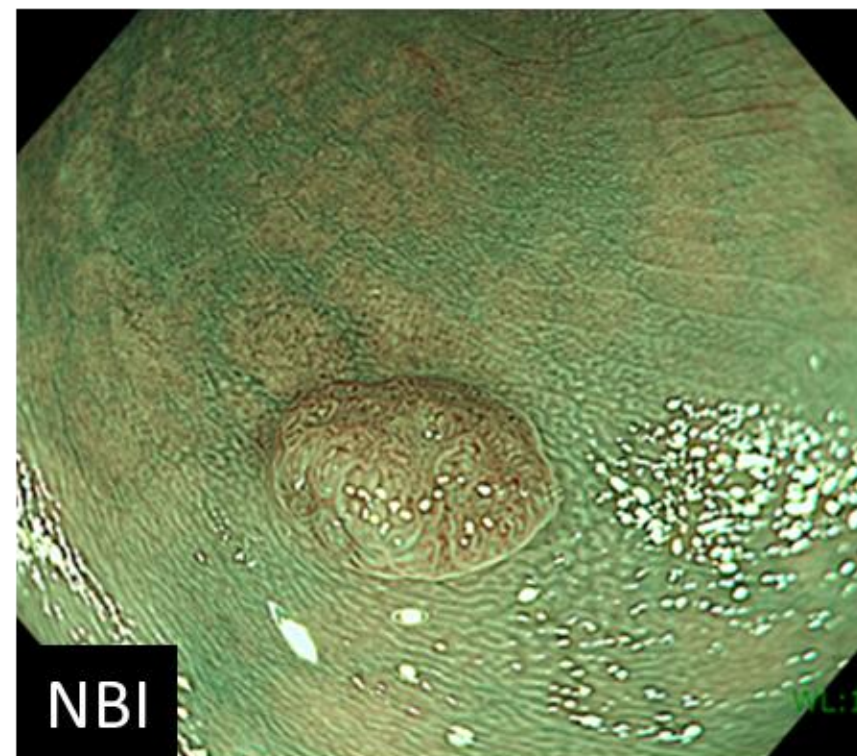
“--- the clinical importance of superficial tumors has recently been recognized in Europe and the US.

The clinical importance of FDR must be disseminated from Japan as well.”

Ref) JGES. Colonoscopy screening and surveillance guidelines. Dig Endosc. 2021; 33: 486-519.

Potential usefulness of IEE and AI for detection of flat adenomas

CADe (WISE VISION, NEC)



Ref) Hassan C, et al. Gastrointest Endosc. 2021; 93: 77-85.

Atkinson NSS, et al. Gastroenterology. 2019; 157: 462-471. etc.



Other Factors

◆ (Sessile) Serrated Lesion Detection Rate

- ✓ Higher proportions of right-sided lesions, female patients, and BRAF mutations in FIT-interval cancer and PCCRC

Ref) Sekiguchi M, et al. C-DETECT study. Dig Endosc 2024.

- ✓ Not necessarily correlated with ADR in endoscopists

Ref) Mizuguchi Y, Kawamura T, Sekiguchi M, et al. DDW 2024.

Table 7 BRAF and RAS mutations in metastatic colorectal cancers with different intervals from previous examinations

Genetic findings	FIT-interval cancer and PCCRC			Others		
	Total (n = 27)	<1 year after FIT- (n = 17)	<3 years after CS (n = 10)	Total (n = 359)	<1 year after FIT+ and no CS (n = 19)	Others (n = 340)
BRAF mutation						
(+)	3 (12.0%)	2 (11.8%)	1 (12.5%)	10 (3.1%)	0 (0.0%)	10 (3.3%)
(-)	22 (88.0%)	15 (88.2%)	7 (87.5%)	311 (96.9%)	19 (100.0%)	292 (96.7%)
Unknown	2	0	2	38	0	38
RAS mutation						
(+)	12 (48.0%)	8 (47.1%)	4 (50.0%)	153 (47.7%)	7 (36.8%)	146 (48.3%)
(-)	13 (52.0%)	9 (52.9%)	4 (50.0%)	168 (52.3%)	12 (63.2%)	156 (51.7%)
Unknown	2	0	2	38	0	38

CS, colonoscopy; FIT, fecal immunochemical test; PCCRC, postcolonoscopy colorectal cancer.

◆ Scope Insertion Time

- ✓ Association between scope insertion time and ADR per endoscopist

Ref) Kawamura T, Sekiguchi M, et al. Dig Endosc. 2024; 36: 51-8.

Sekiguchi M, et al. J Gastroenterol Hepatol. 2022; 37: 2120-30. etc.



Summary

- Colonoscopy is widely used for CRC screening in Asia.
- Monitoring and feedback systems of colonoscopy quality are being developed (particularly, in Taiwan), leading to the improvement in the quality. However, there is much room for improvement.
- Detection of flat lesions (particularly, LST-NG) is worthy of attention.



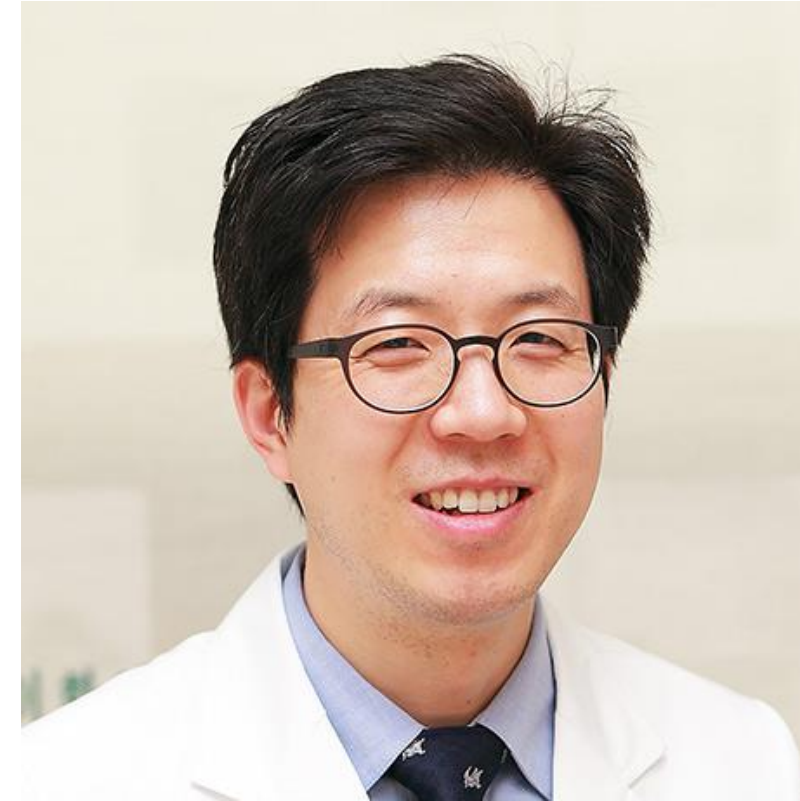
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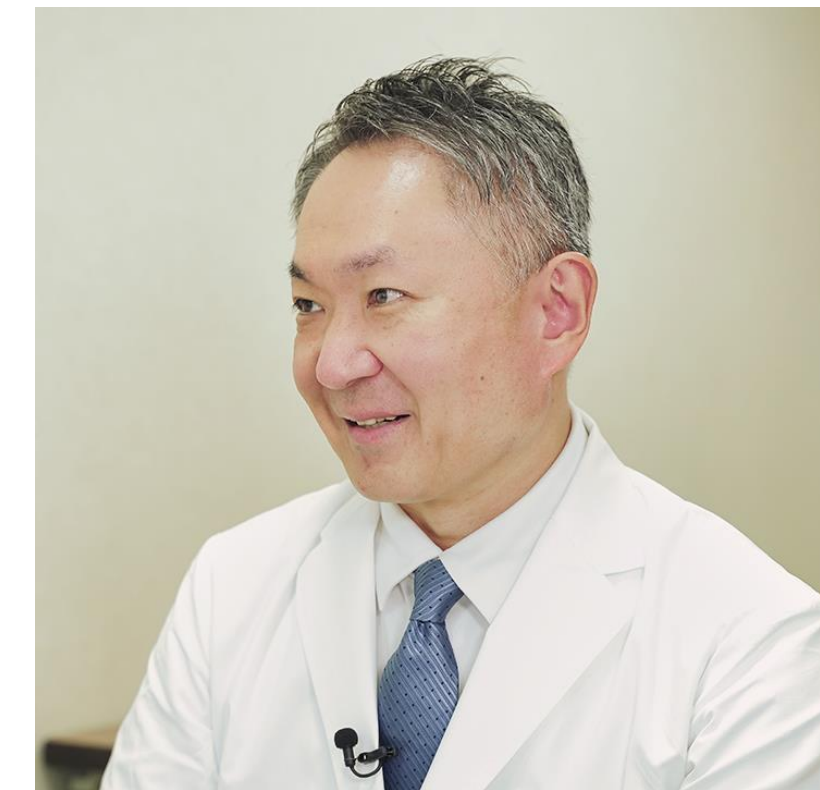
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