



WEO

The voice of world
endoscopy

Post-surgery endoscopy surveillance for colorectal cancer

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Why are we here?

Organized screening
programs

Increased lesion detection

Improved surgical
techniques

Surgery for CRC

Suboptimal baseline
colonoscopy

Inappropriate aggressive
use of surveillance

Increased rate of pts sent to surveillance



Colonoscopy Surveillance after Colorectal Cancer Resection: Recommendations of the US Multi-Society Task Force on Colorectal Cancer

Charles J. Kahi^{1,2}, C. Richard Boland³, Jason A. Dominitz^{4,5}, Francis M. Giardiello⁶, David A. Johnson⁷, Tonya Kaltenbach^{8,9}, David Lieberman¹⁰, Theodore R. Levin¹¹, Douglas J. Robertson^{12,13} and Douglas K. Rex²

The US Multi-Society Task Force has developed updated recommendations to guide health care providers with the surveillance of patients after colorectal cancer (CRC) resection with curative intent. This document is based on a critical review of the literature regarding the role of colonoscopy, flexible sigmoidoscopy, endoscopic ultrasound, fecal testing and CT colonography in this setting. The document addresses the effect of surveillance, with focus on colonoscopy, on patient survival after CRC resection, the appropriate use and timing of colonoscopy for perioperative clearing and for postoperative prevention of metachronous CRC, specific considerations for the detection of local recurrence in the case of rectal cancer, as well as the place of CT colonography and fecal tests in post-CRC surveillance.

SUPPLEMENTARY MATERIAL is linked to the online version of the paper at <http://www.nature.com/ajg>

Am J Gastroenterol 2016; 111:337–346; doi:10.1038/ajg.2016.22; published online 12 February 2016

Endoscopic surveillance after surgical or endoscopic resection for colorectal cancer: European Society of Gastrointestinal Endoscopy (ESGE) and European Society of Digestive Oncology (ESDO) Guideline



Authors

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New and Recurrent Colorectal Cancers After Resection: a Systematic Review and Meta-Analysis of Endoscopic Surveillance Studies

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When does surveillance start?

- After surgery....ok, but:
 - Risk of synchronous cancer (0.7-7%)
 - Etiology of metachronous cancer
 - 43% missed lesion
 - 5.4% incomplete resection

When does surveillance start?

- After surgery....ok, but:

Recommendation

We recommend that patients with CRC undergo high-quality perioperative clearing with colonoscopy. The procedure should be performed preoperatively, or within a 3- to 6-month interval after surgery in the case of obstructive CRC. The goals of perioperative clearing colonoscopy are detection of synchronous cancer and detection and complete resection of precancerous polyps.

Strong recommendation, low-quality evidence

When does surveillance start?

- After surgery....ok, but:

- After HIGH-QUALITY colonoscopy:

- DIAGNOSIS

1. Adequate bowel preparation (split regimen)
2. Intubation of the caecum (photodocumentation)
3. Meticulous exploration (withdrawal time ≥ 6 minutes)
4. Competent endoscopist (ADR $>25\%/45\%$)

- RESECTION

1. Competent endoscopist (post-EMR recurrences $<20\%$)
2. Number of synchronous polyps (≥ 5 adenomas or serrated polyps, SPS)
3. Size of synchronous polyps ($\geq 10/20/40$ mm)
4. Morphology of synchronous polyps (flat vs. sessile vs. pedunculated)
5. Type of resection (complete vs. Incomplete, en bloc vs. non en bloc)
6. Post-EMR surveillance (tattoo, advanced imaging, biopsy)



REPEAT!



TAKE CARE!

When does surveillance start?

Table 1. Baseline Characteristics of the Included Studies

First author, year	Enrollment period	Study design	Study location	Centers, n	CRC, n	Patients, n	Mean age, y	Male sex, %	Quality ^a of colonoscopy	Risk of bias
Weber, 1986 ¹¹	1978–1986	Retrospective	USA	1	79	75	71	NA	NA	High
Michael, 1989 ¹²	1983–1988	Retrospective	UK	1	63	63	NA	NA	NA	High
Brady, 1990 ¹³	NA	Prospective	USA	1	207	207	NA	NA	NA	High
Himal, 1991 ¹⁴	1982–NA	Retrospective	Canada	1	112	112	NA	NA	NA	High
McFarland, 1991 ¹⁵	1980–NA	Prospective	UK	1	74	74	66	50	NA	High
Granqvist, 1992 ¹⁶	1981–1990	Retrospective	Sweden	1	396	390	64	47.4	NA	High
Patchett, 1993 ¹⁷	1983–NA	Prospective	UK	1	132	132	63.5	59.1	NA	Intermediate
Chen, 1994 ¹⁹	1972–1990	Prospective	Australia	1	231	231	NA	48.5	NA	Intermediate
Khoury, 1996 ¹⁸	1984–1994	Retrospective	USA	1	389	389	65.8	53.2	NA	High
Leggett, 1997 ²⁰	1980–NA	Retrospective	Australia	1	433	433	NA	NA	NA	High
Barrier, 1998 ²¹	1986–NA	Retrospective	France	1	179	175	66	55.4	High	Intermediate
Togashi, 2000 ²²	1992–1995	Retrospective	Japan	1	341	341	59.6	61.3	NA	Intermediate
Stigliano, 2000 ²³	1970–1988	Retrospective	Italy	1	322	322	NA	NA	NA	Intermediate
McFall, 2003 ²⁴	1990–2002	Retrospective	UK	1	226	226	67.7	46	NA	High
Skaife, 2003 ²⁵	NA	Prospective	Singapore	1	611	611	66.7	53.2	NA	High
Ntinas, 2004 ²⁶	2001–2004	Retrospective	Greece	1	41	41	69.5	65.9	NA	High
Lan, 2005 ²⁷	1981–2001	Retrospective	Taiwan	1	3846	3846	63.9	70.9	NA	Intermediate
Mathew, 2006 ²⁸	1998–2003	Retrospective	UK	1	105	105	67.8	58.1	NA	High
Hassan, 2006 ²⁹	1998–2004	Prospective	Italy	3	318	318	62	51.6	NA	High
Ballesté, 2007 ³⁰	2000–2001	Prospective	Spain	10	355	355	67	62.8	NA	High
Wang, 2009	1995–2001	RCT, prospective	China	1	165	165	54.6	53.5	NA	Low
(intensive surveillance) ³¹										
Wang, 2009	1995–2001	RCT, prospective	China	1	161	161	54.4	55.3	NA	Low
(routine surveillance) ³¹										
Hahn, 2012 ³²	2001–2009	Prospective	Korea	1	58	58	62.7	53.5	NA	High
Sakamoto, 2013 ³³	2004–2005	Retrospective	Japan	1	459	459	62	58.4	NA	Intermediate
Heo, 2014 ³⁴	2005–2010	Retrospective	Korea	1	70	70	63.2	52.9	NA	High
Battersby, 2014 ³⁵	1995–2012	Prospective	UK	1	538	538	70.8	56.3	NA	High
le Clercq, 2015 ³⁶	2001–2010	Retrospective	Netherlands	3	5357	5157	70	53.7	High	Low
Marques-Antunes, 2017 ³⁷	2008–2011	Retrospective	Portugal	1	535	535	65	62.2	High	Intermediate

NA, not available; RCT, randomized controlled trial.

^aHigh-quality colonoscopy means scope introduction up to the cecum or ileocolonic anastomosis with adequate bowel preparation.

When does surveillance start?

- Real case

- Advanced cancer – sigmoid colon
- Non-polypoid lesion 2 cm – transverse colon
 - Complete P-EMR + tattoo
 - High-grade dysplasia
- Should we....
 - Repeat colonoscopy immediately - before surgery
 - Repeat colonoscopy 3-6 months - before surgery
 - Repeat colonoscopy 3-6 months - after surgery
 - Repeat colonoscopy 12 months - after surgery

When does surveillance start?

- After surgery....ok, but:
 - After HIGH-QUALITY colonoscopy
 - After COMPLETE imaging
 - Obstructing CRC

When does surveillance start?

- After surgery....ok, but:
 - After HIGH-QUALITY colonoscopy
 - After COMPLETE colonoscopy
 - Obstructing CRC

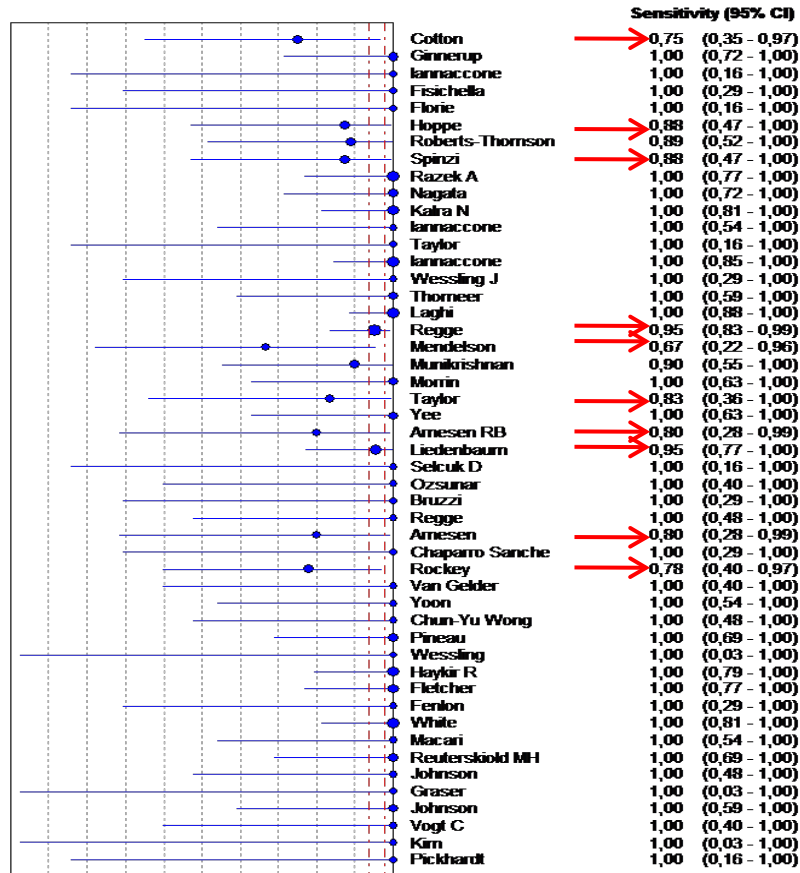
Recommendation. In patients with obstructive CRC precluding complete colonoscopy, we recommend CTC as the best alternative to exclude synchronous neoplasms. Double-contrast barium enema is an acceptable alternative if CTC is not available.

Strong recommendation, moderate-quality evidence

Sensitivity of CT colonography and colonoscopy in the detection of colorectal cancer: systematic review and meta-analysis

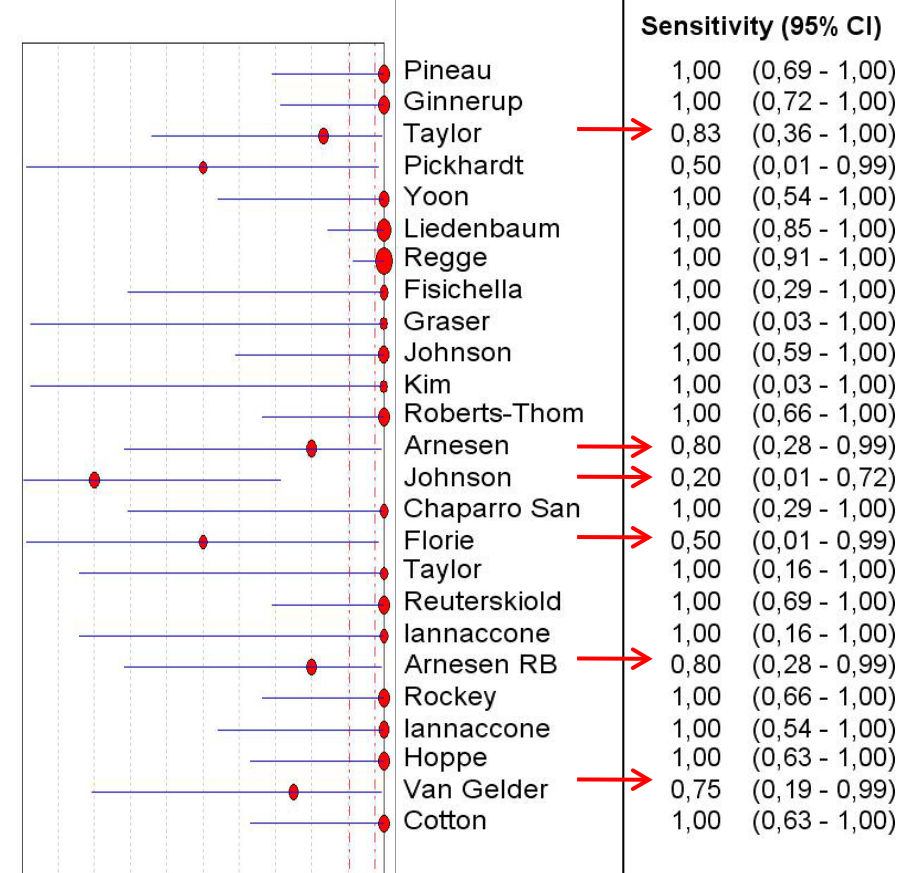
Pickhardt PJ, Hassan C, Halligan S et al. Radiology 2011

CTC Sensitivity



96% (398/414)
(94-98%), I²: 0%

OC Sensitivity



95% (178/188)
(90-97%), I²: 50%

When does surveillance start?

- After surgery....ok, but:
 - After HIGH-QUALITY colonoscopy
 - After COMPLETE imaging
 - After exclusion of Lynch syndrome
 - High risk of synchronous and metachronous CRC
 - High risk of non-polypoid neoplasia - chromoendoscopy

When does surveillance do?

- After surgery....ok, why:
 - Recurrence of the primary cancer (colon) – Intensive vs non intensive surveillance
 - Does it anticipate the diagnosis of intraluminal recurrence?
 - -5.2 months (95% CI -10 to -1)
 - Detection asymptomatic recurrences (RR 2.59, 95% CI 1.7-4)
 - Curative surgery x recurrences (RR 1.98, 95% CI 1.5-2.6)

When does surveillance do?

- After surgery....ok, why:
 - Recurrence of the primary cancer (colon) – Intensive vs non intensive surveillance
 - Does it anticipate the diagnosis of intraluminal recurrence?
 - Does it improve cancer-related survival?
 - RR = 0.9; 95% CI 0.7–1.1

What does surveillance do?

- After surgery....ok, why:
 - Recurrence of the primary cancer (colon) – Intensive vs non intensive surveillance
 - Does it anticipate the diagnosis of intraluminal recurrence?
 - Does it improve cancer-related survival?
 - Does it improve overall survival?

What does surveillance do?

- After surgery....ok, why:
 - Recurrence of the primary cancer (colon) – Intensive vs non intensive surveillance
 - Does it anticipate the diagnosis of intraluminal recurrence?
 - Does it improve cancer-related survival?
 - Does it improve overall survival?
 - RR 0.75, 95% CI 0.66-0.86

What does surveillance do?

- After surgery....ok, why:
 - Recurrence of the primary cancer (colon) –
 - Does it anticipate the diagnosis of intraluminal recurrence?
 - Does it improve cancer-related survival?
 - Does it improve overall survival?
 - Does a more intensive endoscopic surveillance improve the outcome?
 - 77% vs 72% overall survival (p=0.25)

What does surveillance do?

- After surgery....ok, why:
 - Recurrence of the primary cancer (colon) – Intensive vs non intensive surveillance
 - Does it anticipate the diagnosis of intraluminal recurrence?
 - Does it improve cancer-related survival?
 - Does it improve overall survival?
 - Does a more intensive endoscopic surveillance improves the outcome?
 - What is its incidence at endoscopy?
 - 2-4%

What does surveillance do?

- After surgery....ok, why:

- Recurrence of the primary cancer (colon)

- Metachronous cancer

- What is the actual risk?

TABLE 3 Metachronous Cancers in Postcancer Resection

Study	N	Colonoscopies	Metachronous CRCs (all)
Barillari ²	481		12
Barrier ³	61‡		0
Carlsson ⁴	129	546	1
Castells ⁵	199		0
Chen ⁶	231		4
Eckardt ⁷	212		0
Granqvist ⁸	390	600	12
Green ⁹	3278		42
Juhl ¹⁰	133	316	4
Khoury ¹¹	389	3889	2
Kjeldsen ¹²	597		10
Kronborg ¹³	239	710	4
Makela ¹⁴	106		1
McFarland ¹⁵	74	237	0
Obrand ¹⁶	444		0
Ohlsson ¹⁷	53¶		0
Patchett ¹⁸	132		2
Pietra ¹⁹	207		1
Schoemaker ²⁰	325	733	8
Skaife ²¹	611	609**	5
Stigliano ²²	322		5
Togashi ²³	341	1570	22
Weber ²⁴	75	197	2
Total	9029	9407	137

1.7-2,2%

What does surveillance do?

- After surgery....ok, why:

- Recurrence of the primary cancer (colon)

- Metachronous cancer

- What is the actual risk?
- What is its temporal distribution?

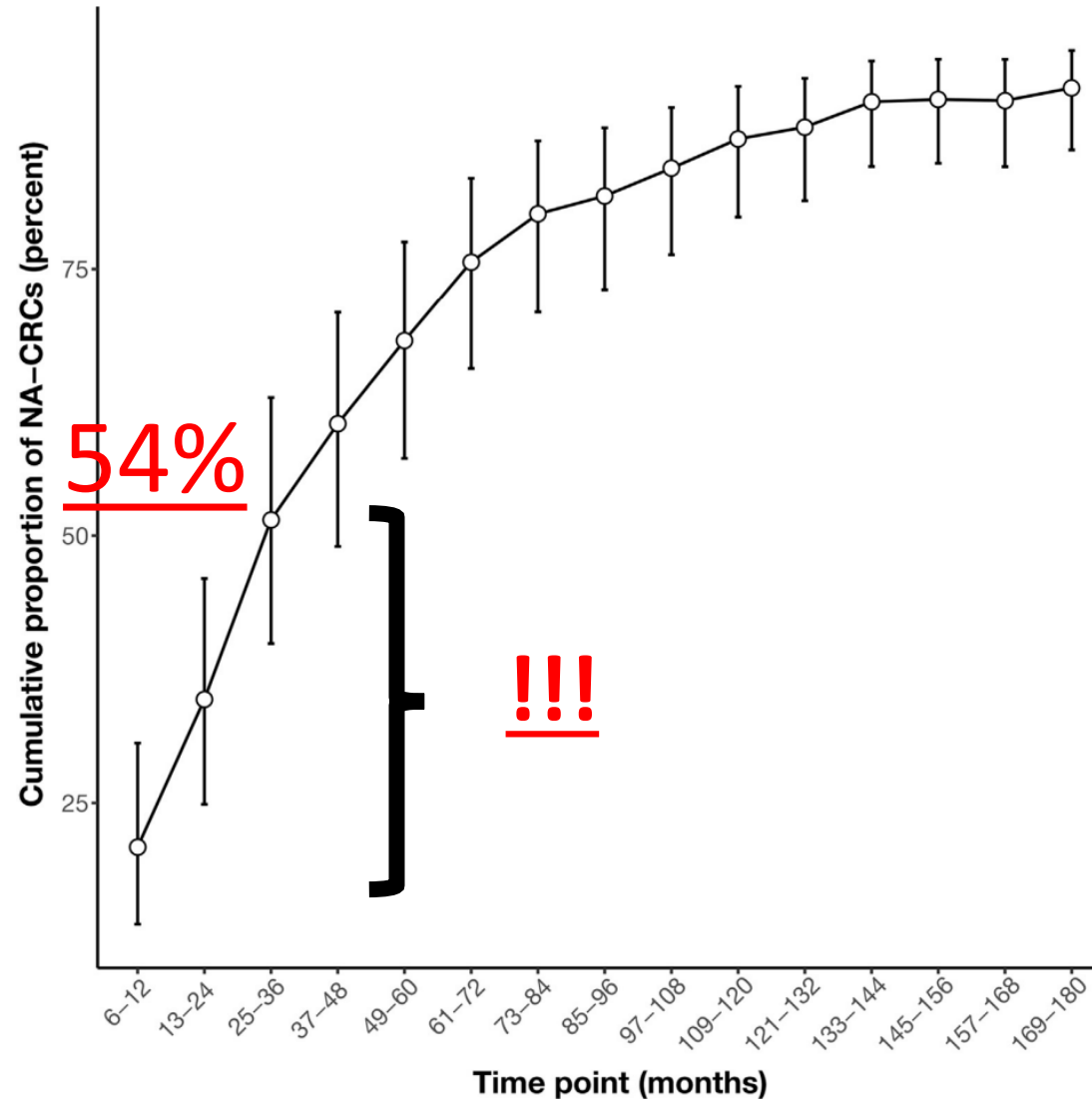
TABLE 3 Metachronous Cancers in Postcancer Resection Surveillance Colonosc

Study	N	Colonoscopies	Metachronous CRCs (all)	Metachronous CRCs (within 24 months)
Barillari ²	481		12	6*
Barrier ³	61‡		0	
Carlsson ⁴	129	546	1	0
Castells ⁵	199		0	
Chen ⁶	231		4	0
Eckardt ⁷	212		0	
Granqvist ⁸	390	600	12	7
Green ⁹	3278		42	24
Juhl ¹⁰	133	316	4	0
Khoury ¹¹	389	3889	2	1
Kjeldsen ¹²	597		10	NS
Kronborg ¹³	239	710	4	3
Makela ¹⁴	106		1	NS
McFarland ¹⁵	74	237	0	
Obrand ¹⁶	444		0	
Ohlsson ¹⁷	53¶		0	
Patchett ¹⁸	132		2	NS
Pietra ¹⁹	207		1	NS
Schoemaker ²⁰	325	733	8	5
Skaife ²¹	611	609**	5	1
Stigliano ²²	322		5	0
Togashi ²³	341	1570	22	9
Weber ²⁴	75	197	2	
Total	9029	9407	137	57

42%

What does surveillance do?

- After surgery....ok, why:



What does surveillance do?

- After surgery....ok, why:

- Recurrence of the primary cancer (colon)

- Metachronous cancer

- What is the actual risk?
- What is its temporal distribution?
- What is the stage at the diagnosis?

TABLE 3 Metachronous Cancers in Postcancer Resection Surveillance Colonoscopy Studie

Study	N	Colonoscopies	Metachronous CRCs (all)	Metachronous CRCs (within 24 months)	Dukes' A or B
Barillari ²	481		12	6*	9
Barrier ³	61‡		0		
Carlsson ⁴	129	546	1	0	NS
Castells ⁵	199		0		
Chen ⁶	231		4	0	NS
Eckardt ⁷	212		0		
Granqvist ⁸	390	600	12	7	5§
Green ⁹	3278		42	24	23
Juhl ¹⁰	133	316	4	0	4
Khoury ¹¹	389	3889	2	1	NS
Kjeldsen ¹²	597		10	NS	NS
Kronborg ¹³	239	710	4	3	4
Makela ¹⁴	106		1	NS	NS
McFarland ¹⁵	74	237	0		
Obrand ¹⁶	444		0		
Ohlsson ¹⁷	53¶		0		
Patchett ¹⁸	132		2	NS	NS
Pietra ¹⁹	207		1	NS	NS
Schoemaker ²⁰	325	733	8	5	5
Skaife ²¹	611	609**	5	1	NS
Stigliano ²²	322		5	0	NS
Togashi ²³	341	1570	22	9	17
Weber ²⁴	75	197	2	1	2
Total	9029	9407	137	57	60

50%

What does surveillance do?

- After surgery....ok, why:

Recommendation

We recommend that patients who have undergone curative resection of either colon or rectal cancer receive their first surveillance colonoscopy 1 year after surgery (or 1 year after the clearing perioperative colonoscopy). Additional surveillance recommendations apply to patients with rectal cancer (see "Additional Considerations in Surveillance of Rectal Cancer").

Strong recommendation, low-quality evidence

What does surveillance do?

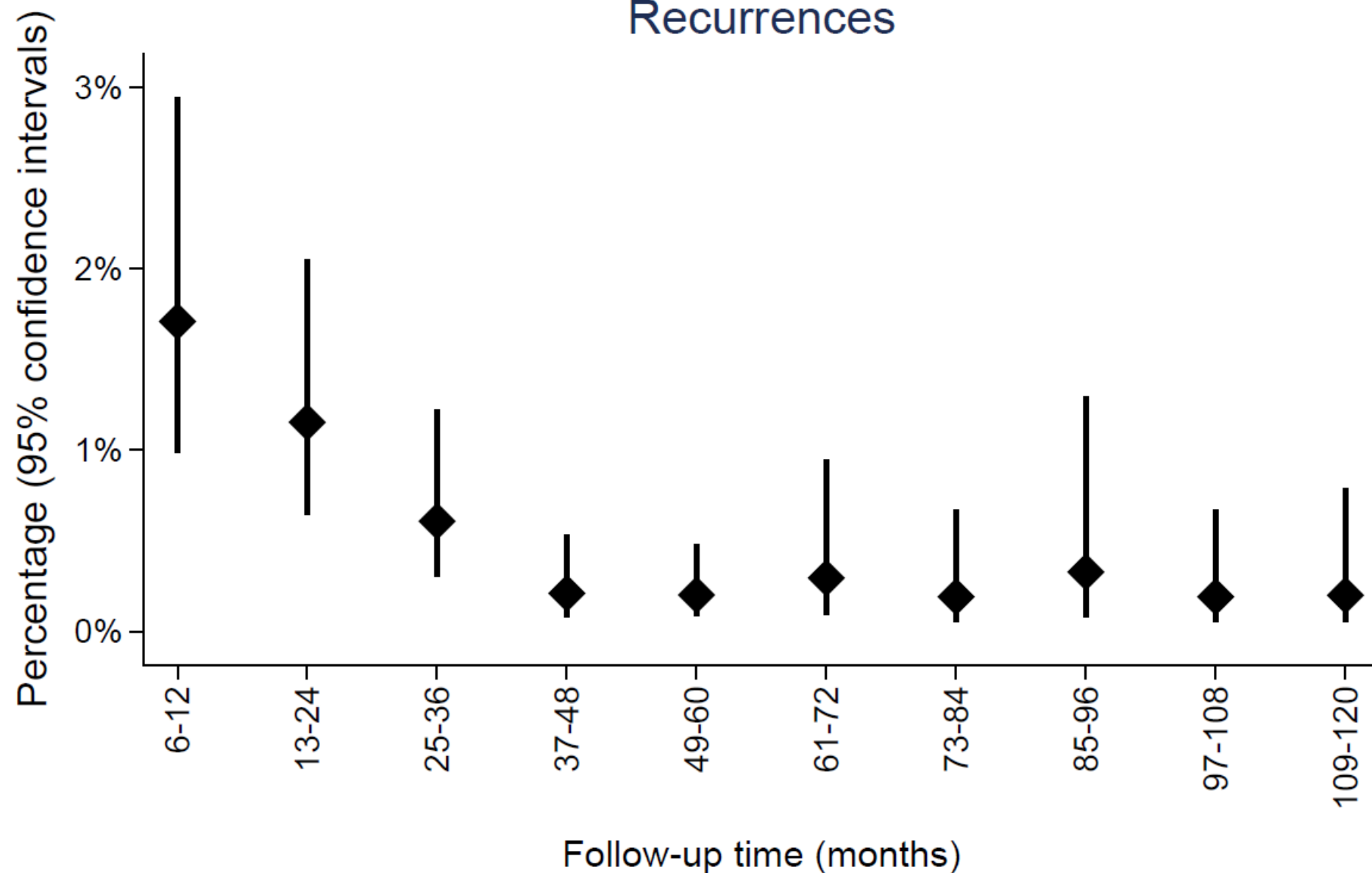
- After surgery....ok, why:

Recommendation

We recommend that, after the 1-year colonoscopy, the interval to the next colonoscopy should be 3 years (i.e., 4 years after surgery or perioperative colonoscopy) and then 5 years (i.e., 9 years after surgery or perioperative colonoscopy). Subsequent colonoscopies should occur at 5-year intervals until the benefit of continued surveillance is outweighed by diminishing life expectancy. If neoplastic polyps are detected, the intervals between colonoscopies should be in accordance with published guidelines for polyp surveillance intervals. These intervals do not apply to patients with Lynch syndrome.

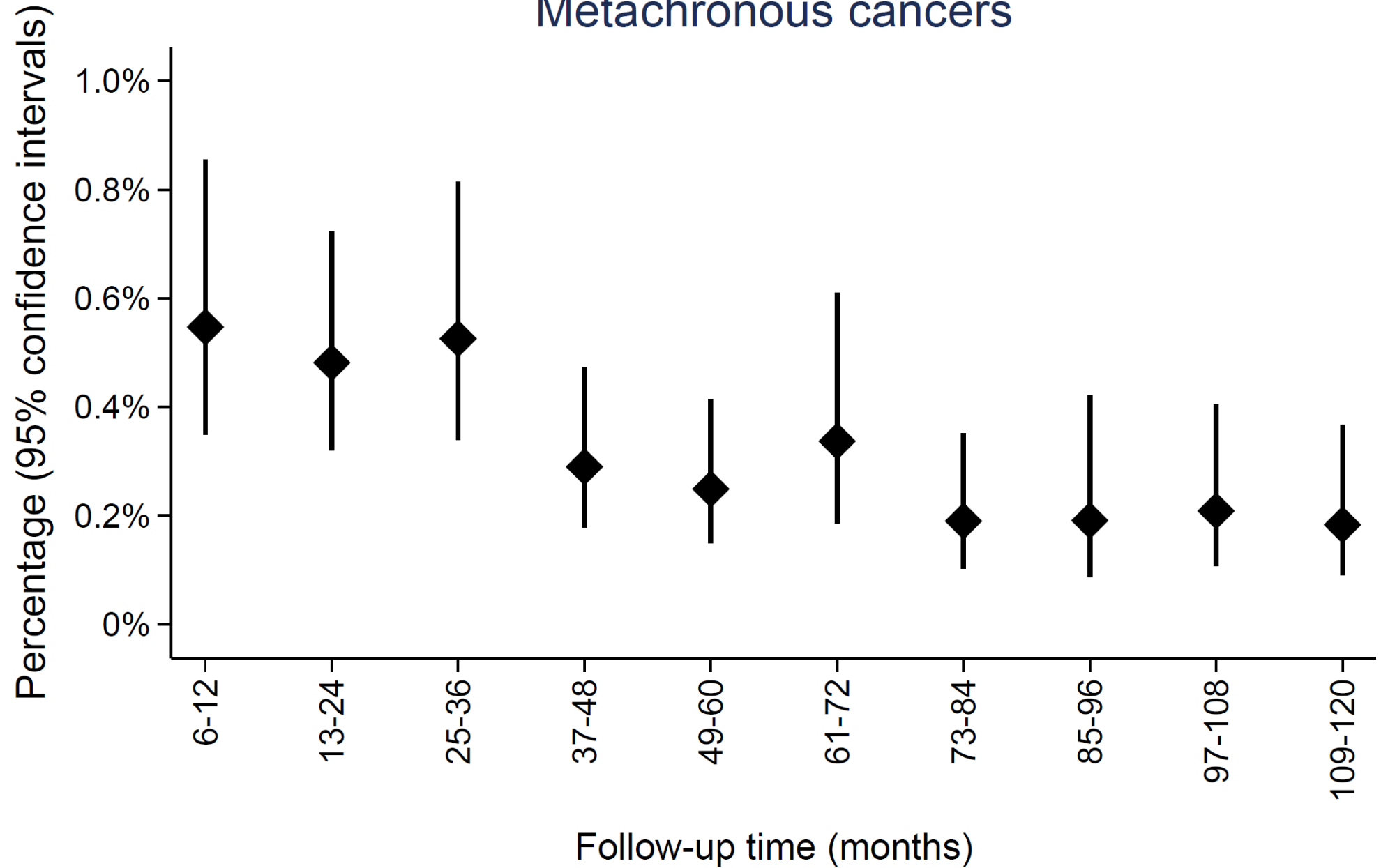
Strong recommendation, low-quality evidence

Recurrences



Crude denominators

Metachronous cancers



Crude denominators

Take Home Clinical Messages

- (Dis-)TRUST your COMPETENT endoscopist
- CTC mandatory in obstructing CRC
- Endoscopic surveillance dictated by metachronous risk (1-4-9)
- Individualize work-up for recurrences

What can we improve?

- Do we **NEED** colonoscopy both at 1 and 3 years after **HIGH QUALITY** baseline colonoscopy?
- Can we **drop** the 3 year surveillance after a negative **HIGH QUALITY** 1 year surveillance? (...or drop the 1 year?)
- Decrease of risk → 3 years post surgery → **MISS** rather than **HIGH RISK**?
- Risk stratification
 - Proximal vs Distal CRC
 - Rectal CRC for anastomotic recurrences
- **HIGH QUALITY SURVEILLANCE STUDIES NEEDED!**

Why are we here?

SURVEILLANCE COLONOSCOPY



DO it BETTER DO it LESS!