



AI and Colonoscopy

HNPCC symposium 2024

Consultant Bo Søndergaard
Endoscopy unit
Gastrounit
Amager og Hvidovre Hospital
Copenhagen

Disclosures

Consultant: Olympus Danmark, Norgine

Research grant: Abbvie

Financial: None

Travel/Congress support last 5 years: Norgine, Abbvie



ai colonoscopy



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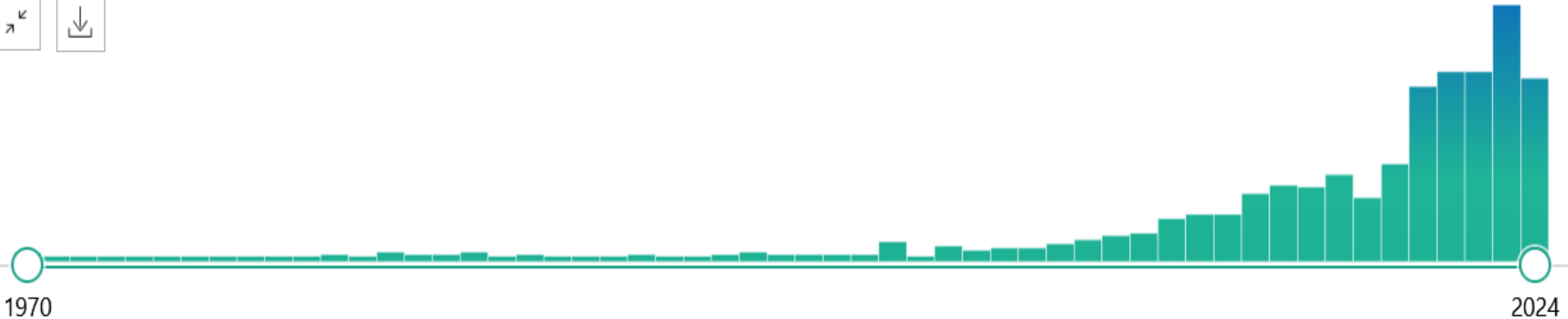
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Recommendation from the Danish Health Technology Council
concerning

Use of artificial intelligence as clinical decision-support in colonoscopy for the diagnosis of neoplastic disease

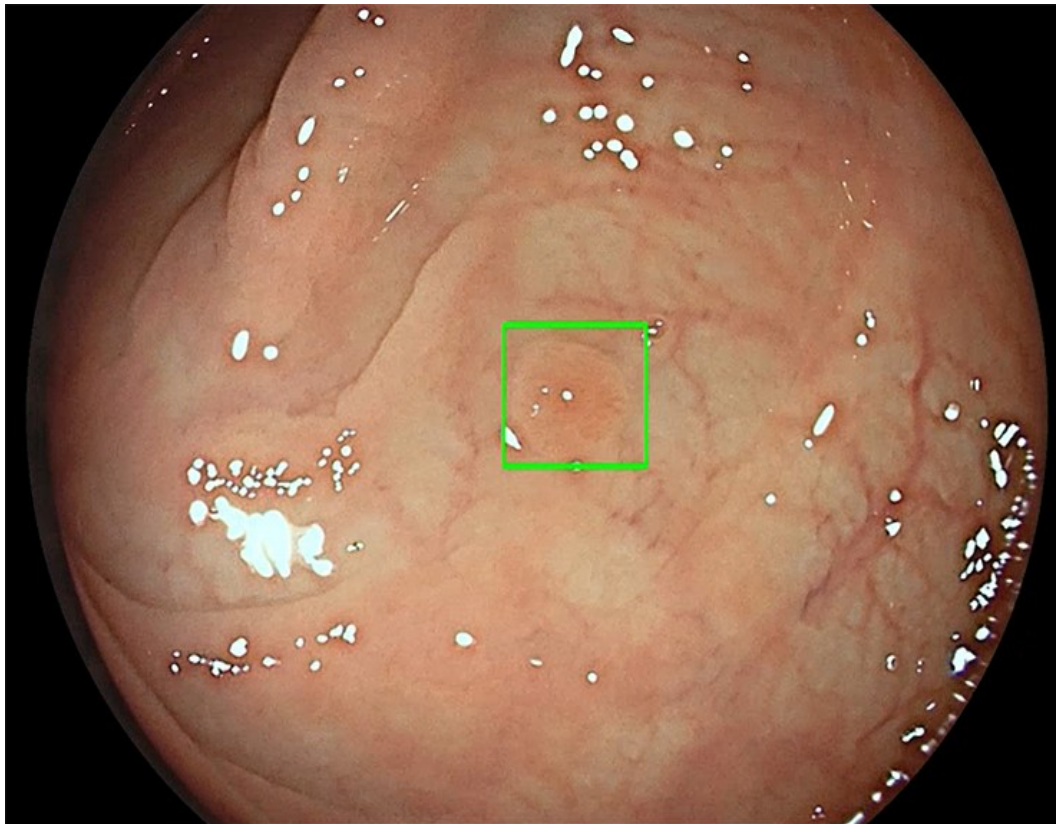
**Recommendation from the Danish Health Technology Council:
The Danish Health Technology Council recommends that computer-aided detection (CADE) should not be implemented as a decision-support tool to aid in the diagnosis of neoplastic disease.**

The Danish Health Technology Council is aware of the rapid rate of advances in computer-aided technology and artificial intelligence and has therefore limited the period of validity of this recommendation.

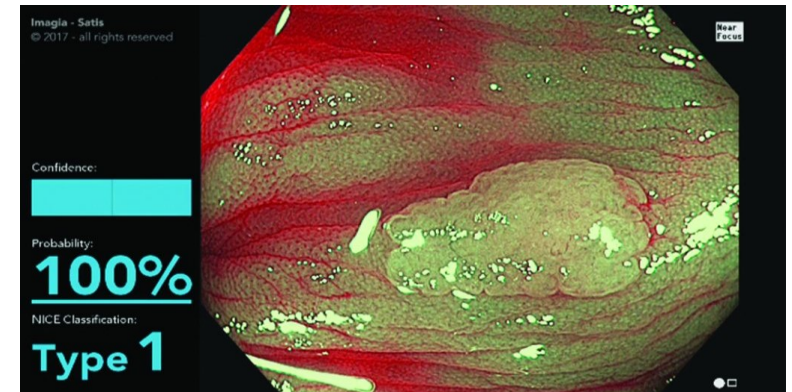
Validity period: This recommendation is valid from 1 February 2023 until Q1 2025. Any update to this recommendation should preferably cover both CADE and CADx (computer-aided characterisation), if the literature supports this.

AI & Colonoscopy

Detection (CAdE)



Diagnosis (CAdx)

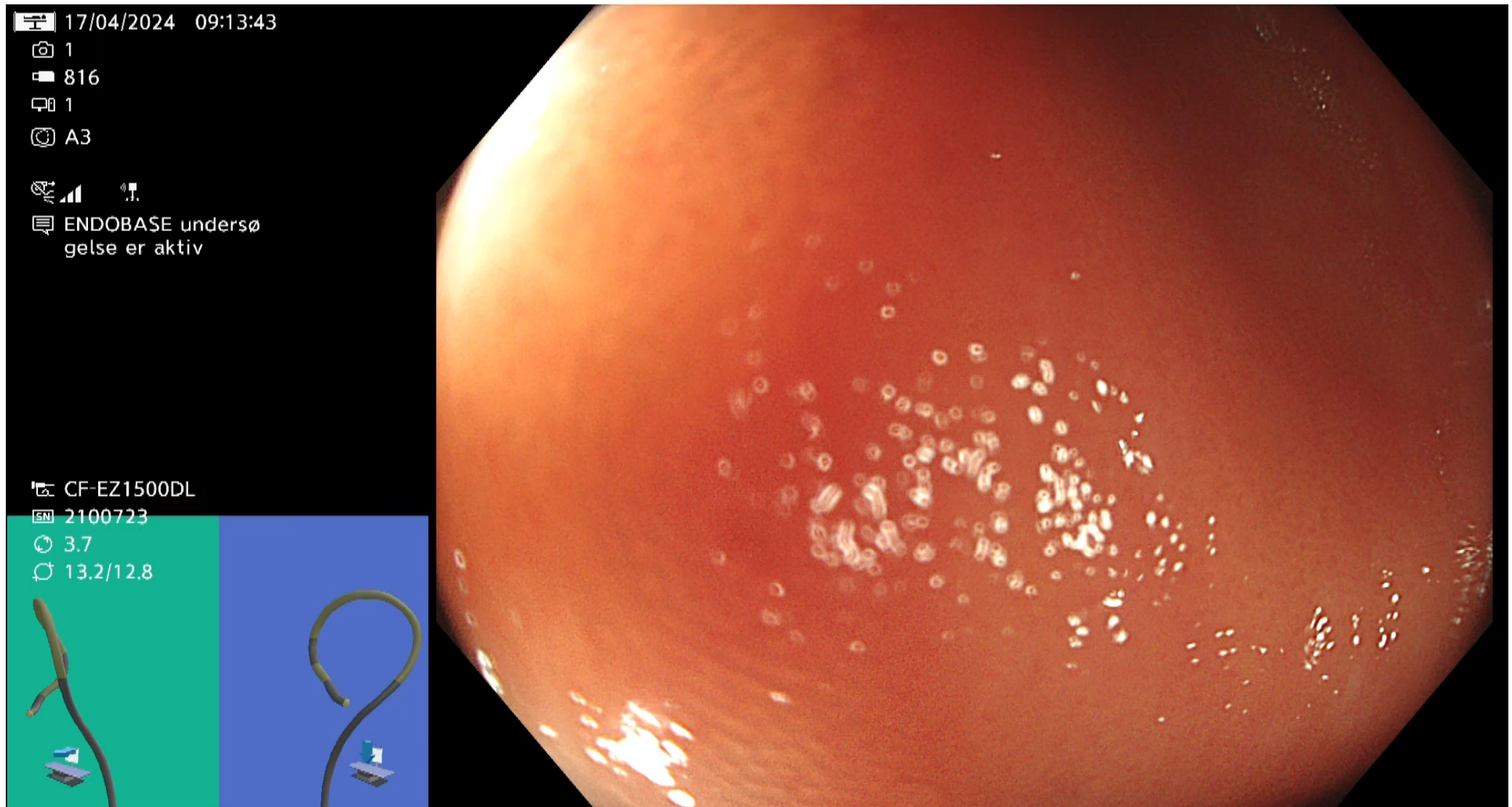


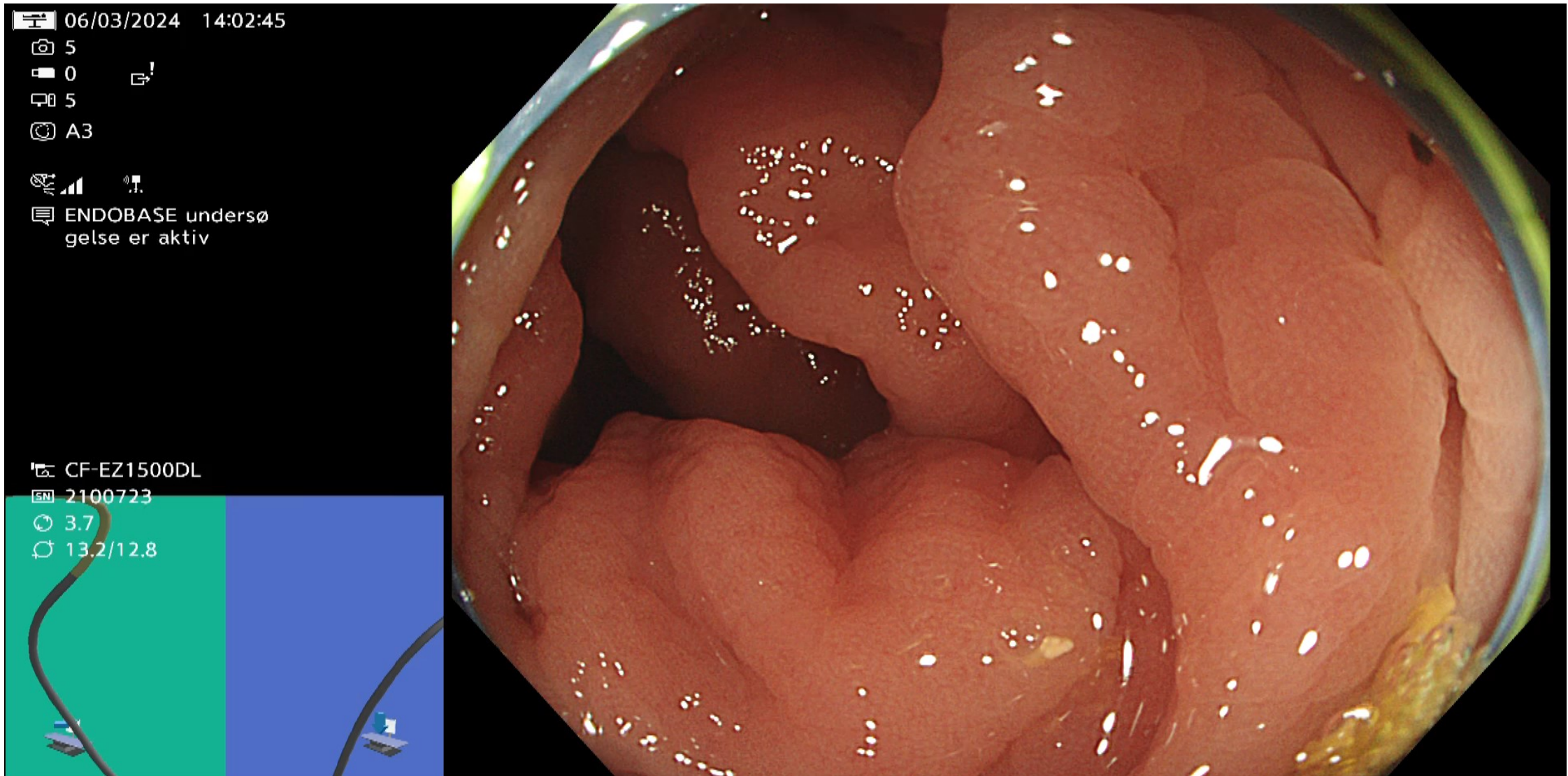
A



B







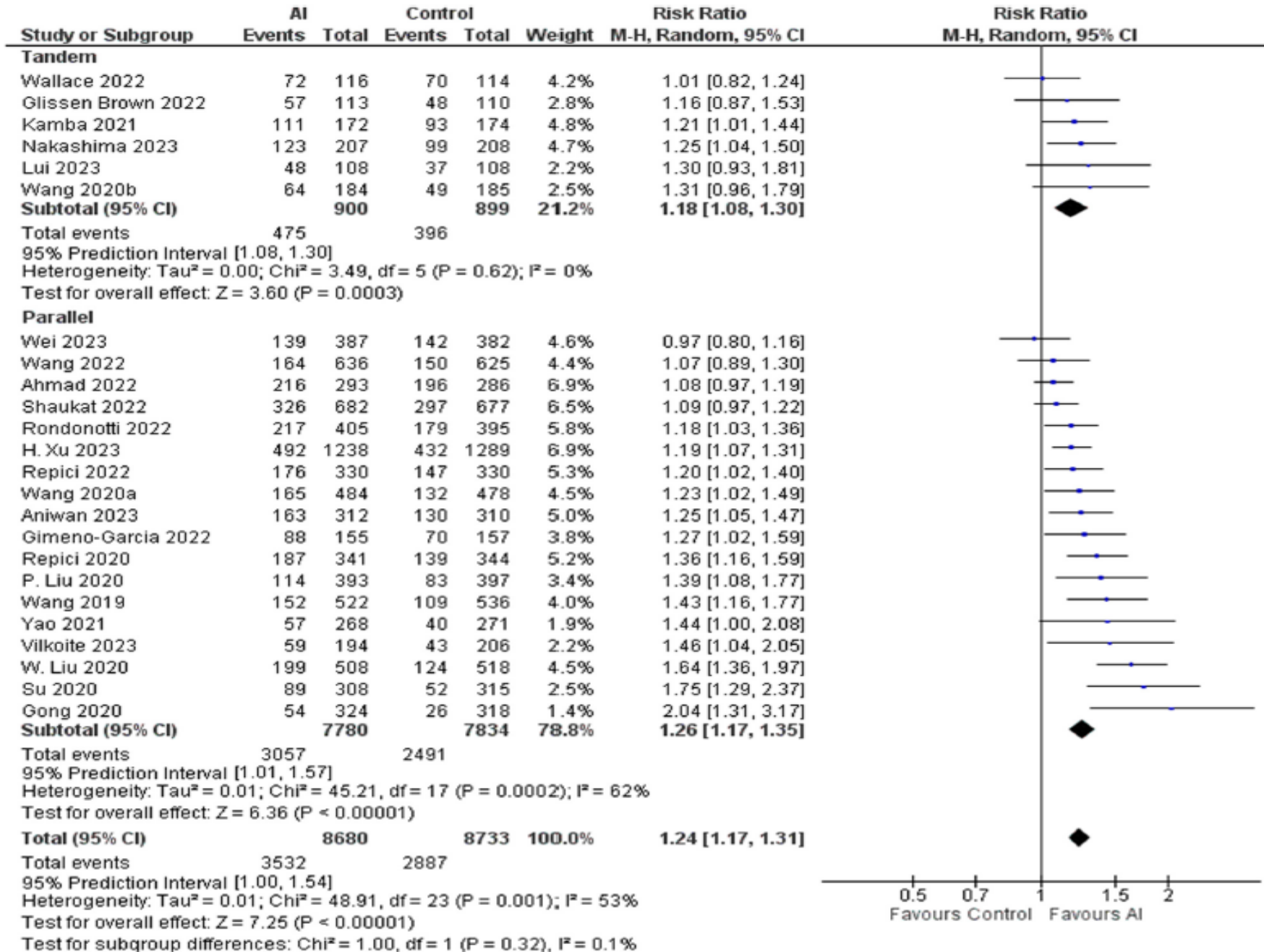
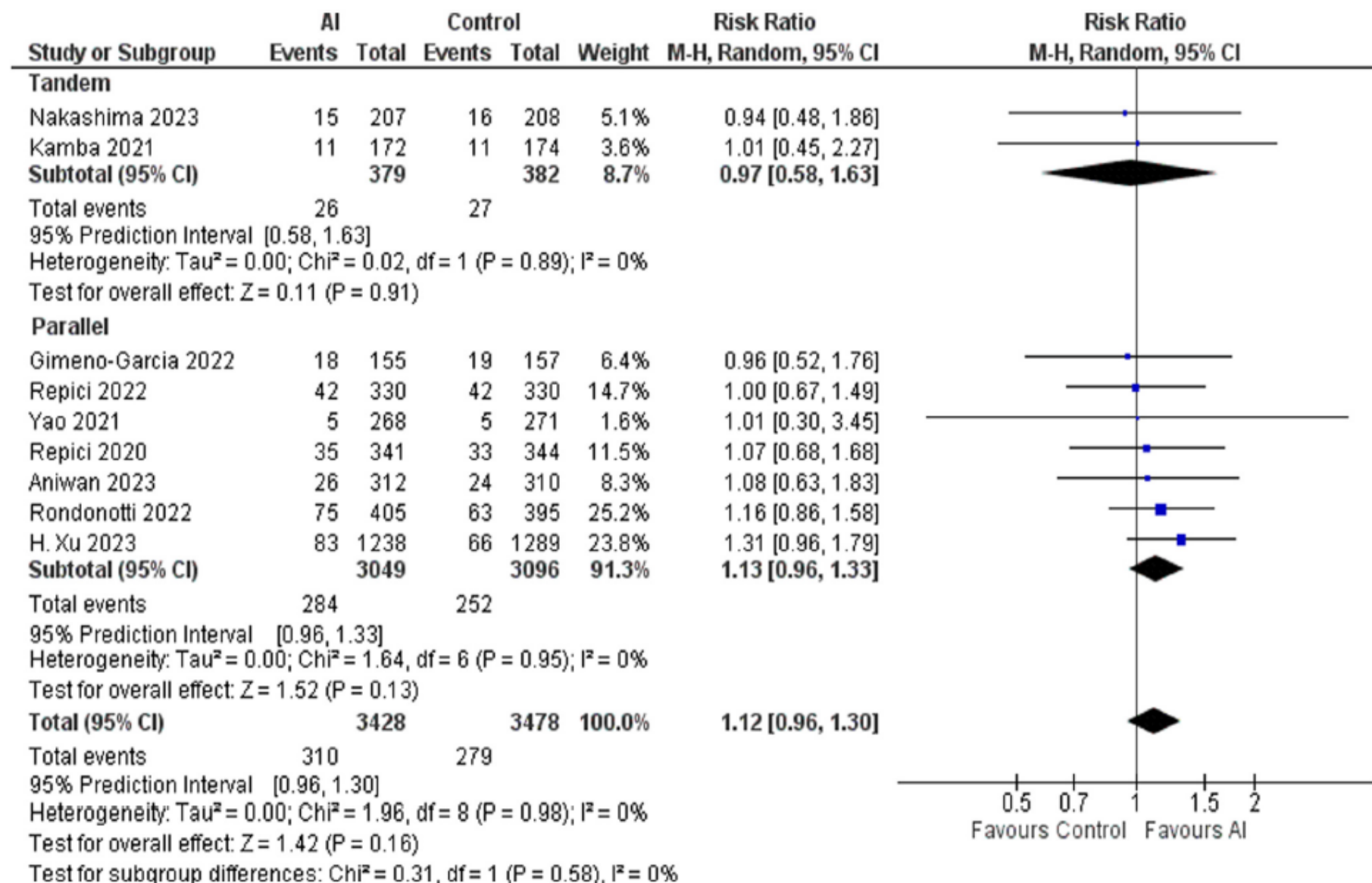
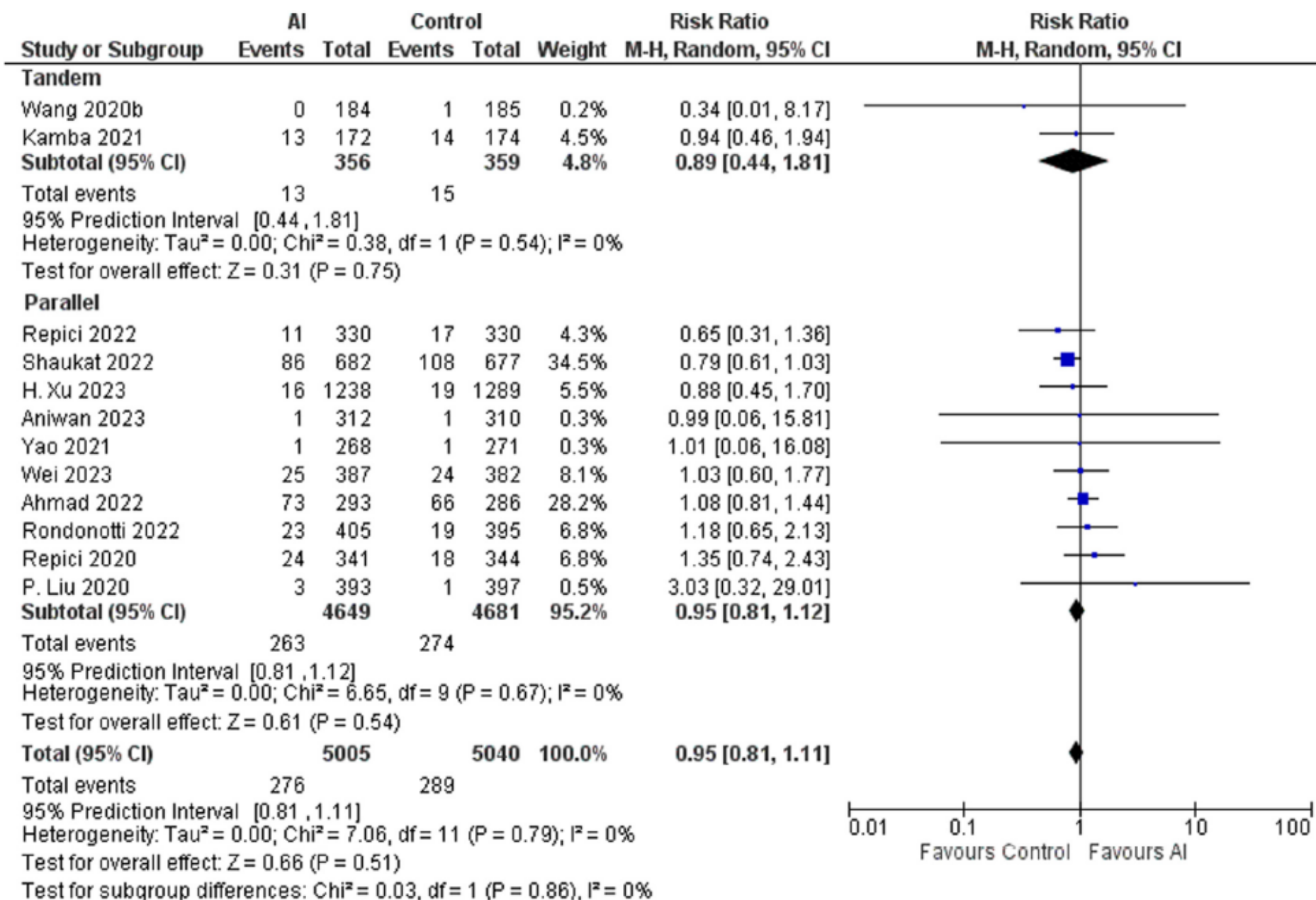


Figure 2. Adenoma detection rates in AI-assisted or control colonoscopies in randomized controlled trials conducted using a tandem versus parallel study design. AI, Artificial intelligence; CI, confidence interval; df , degrees of freedom; M-H, Mantel-Haenszel.

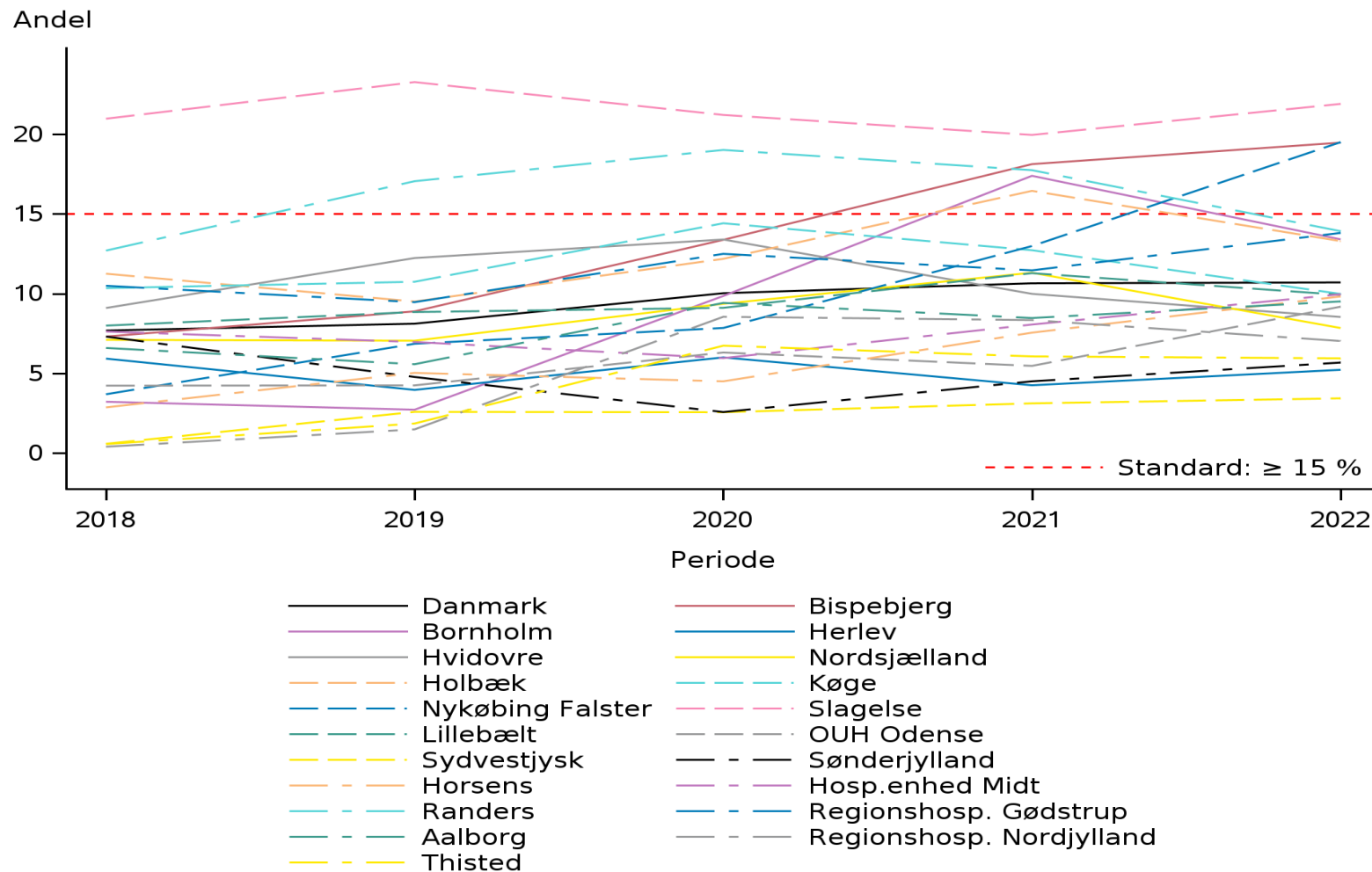


Supplementary Figure 3. Advanced adenoma detection rates in AI-assisted or control colonoscopies in randomized controlled trials conducted using a tandem versus parallel study design. *AI*, Artificial intelligence; *CI*, confidence interval; *df*, degrees of freedom; *M-H*, Mantel-Haenszel.



Supplementary Figure 1. Sessile serrated lesion detection rates in AI-assisted or control colonoscopies in randomized controlled trials conducted using a tandem versus parallel study design. *AI*, Artificial intelligence; *CI*, confidence interval; *df*, degrees of freedom; *M-H*, Mantel-Haenszel.

Detection rate SSL 2018-22 CRC Screening



AI CADx

Pro:

Never gets tired!

Superior detection af small adenomas

Possible steeper learning curve

Cons:

False positives

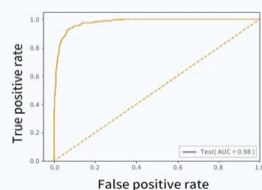
Over treatment of tiny polyps

Poor evidence of clinical
meaningfull effects

Outcomes	AI-driven app group		Control group		Rate difference	P value
	N	n(%, 95%CI)	N	n(%, 95%CI)	%; 95%CI	
Rate of adequate bowel preparation (primary outcome)						
FAS	253	224 (88.54, 83.95–92.19)	247	162 (65.59, 59.30–71.49)	22.95;15.43–30.20	<0.001
PPS	225	202 (89.78, 85.06–93.41)	247	162 (65.59, 59.30–71.49)	24.19;16.57–31.42	<0.001
Rate of excellent bowel preparation						
FAS	253	70 (27.67, 22.25–33.62)	247	49 (19.84, 15.05–25.36)	7.83;0.07–15.45	0.040
PPS	225	64 (28.44, 22.65–34.82)	247	49 (19.84, 15.05–25.36)	8.61;0.59–16.57	0.029

Test Dataset

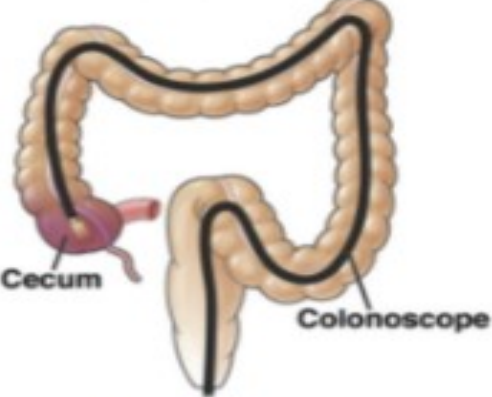
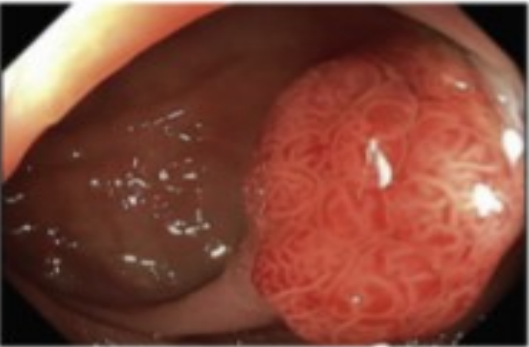
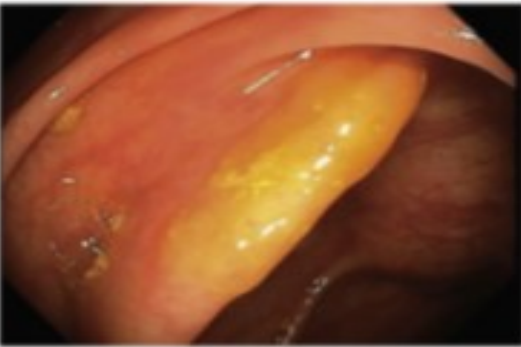
124 photos labelled as adequate
511 photos labelled as inadequate



Accuracy : 95.15%
AUC : 0.98
Sensitivity : 81.41%
Specificity : 97.25%

Zhu, Y., Zhang, DF., Wu, HL. *et al.* Improving bowel preparation for colonoscopy with a smartphone application driven by artificial intelligence. *npj Digit. Med.* **6**, 41 (2023).
<https://doi.org/10.1038/s41746-023-00786-y>

AI koloskopi

A Measure, track, and provide feedback		
Bowel prep adequacy rate Goal: $\geq 90\%$, aspirational $\geq 95\%$ Boston Bowel Prep Score: ≥ 6 	Cecal intubation rate Goal: $\geq 90\%$, aspirational $\geq 95\%$ 	Withdrawal time Goal: ≥ 6 min, aspirational ≥ 9 min 
Adenoma detection rate Goal: $\geq 30\%$, aspirational $\geq 35\%$ 	Serrated lesion detection rate Goal: $\geq 7\%$, aspirational $\geq 10\%$ 	Adverse events Measure unit-level colonoscopy adverse events 