

# Colonic Polyps: Gotta Catch 'Em All!

Strategies to Maintain Quality in Adenoma Detection Rate

**Rachel S. Frank, MD**

Division of Gastroenterology and Hepatology

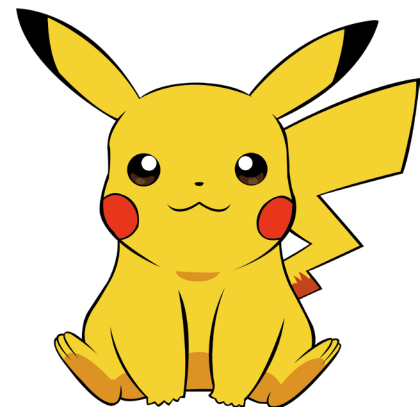
Cooper Digestive Health Institute

Cooper University Health Care

Assistant Professor of Medicine

Cooper Medical School of Rowan University

Camden, NJ



# Disclosures

- None

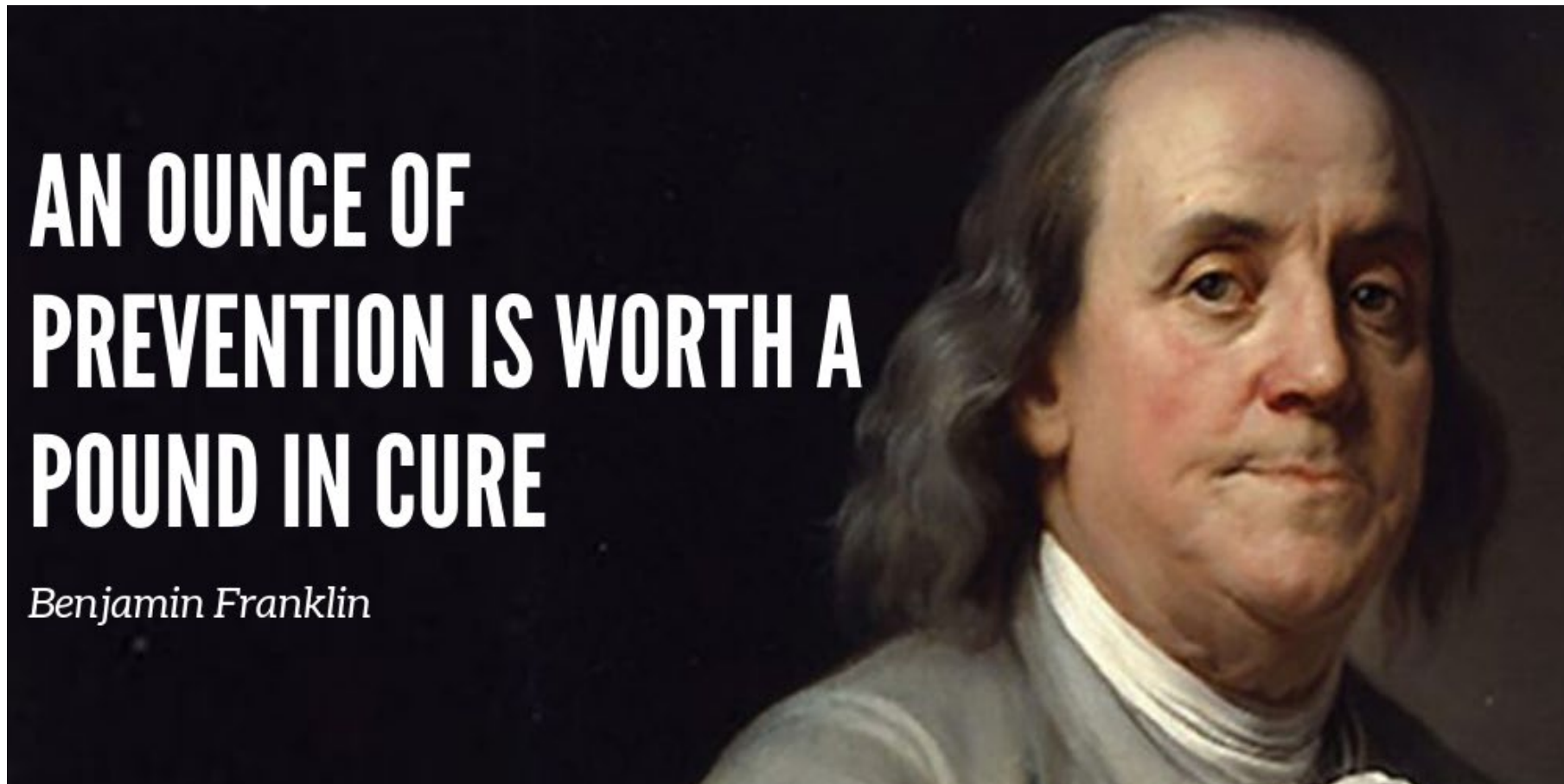
# Outline

- Definitions
- Factors that may affect adenoma detection rate
  - (and why we care)
- Strategies for Improvement
  - Bowel preparation quality
  - Procedural withdrawal time
  - Incorporation of Artificial Intelligence technology
  - Chromoendoscopy and advanced imaging techniques
- Conclusions

# Definition of Adenoma Detection Rate (ADR)

The proportion of patients age 50 years or older with at least one adenoma of any size detected during colonoscopy

Why should we care?



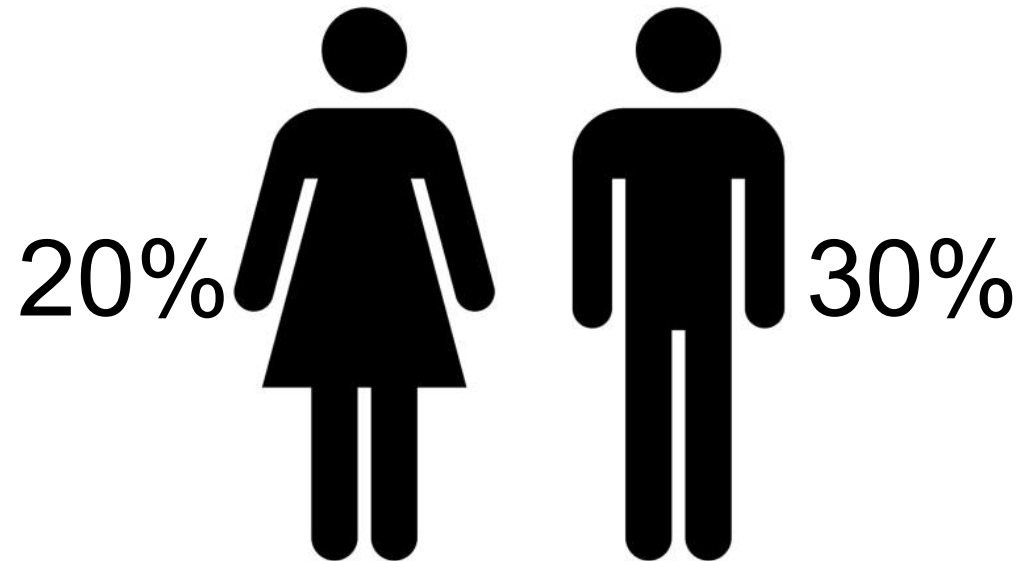
# Colorectal Cancer Prevention is Important

- Colorectal cancer (CRC) is the 3<sup>rd</sup> leading cause of death (and the 2<sup>nd</sup> leading cause of cancer death) in the U.S in both men and women
- Not meeting quality benchmarks for ADR is associated with increased risk of developing interval colorectal cancer

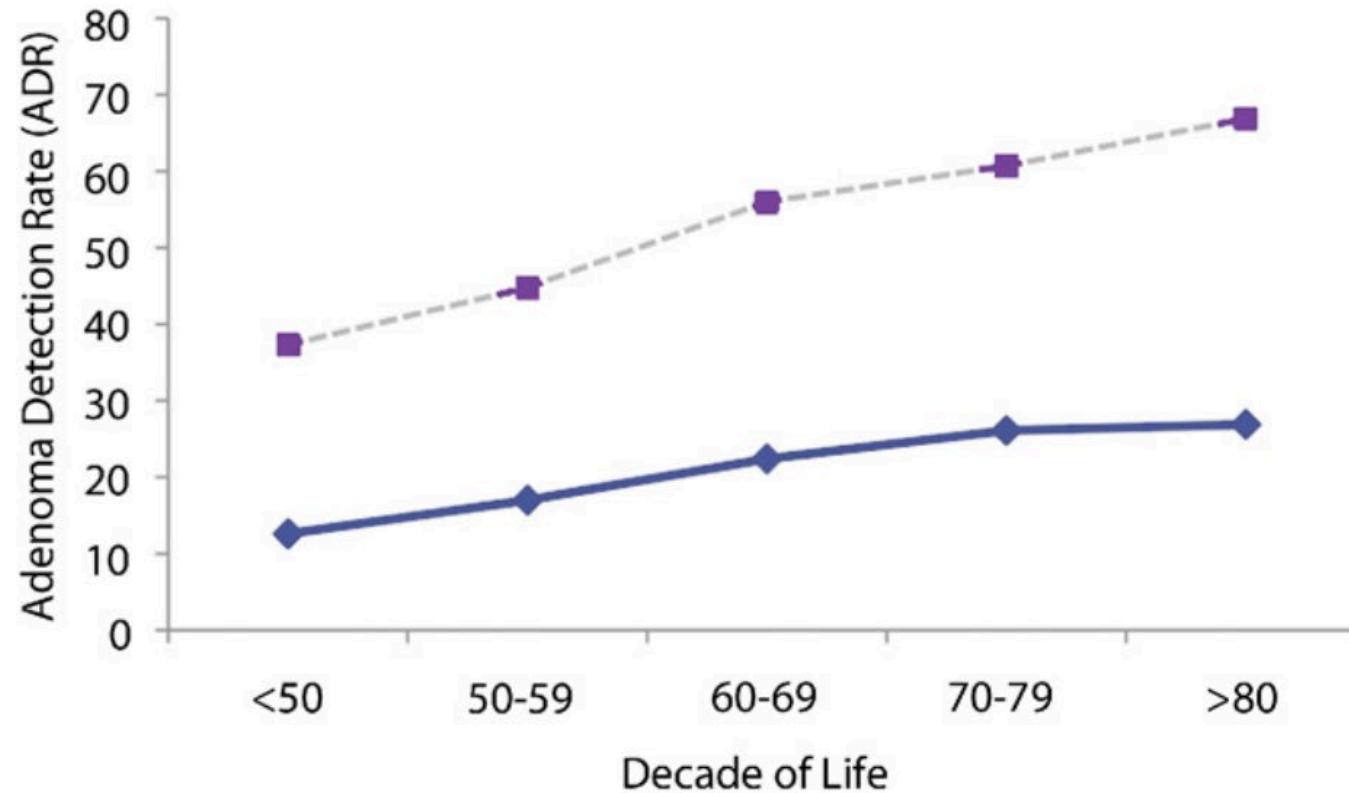
 1% ADR =  3% RISK CRC

# Goal ADR

American Society for Gastrointestinal Endoscopy and the American College of Gastroenterology recommend ADR of at least 25% in average-risk individuals



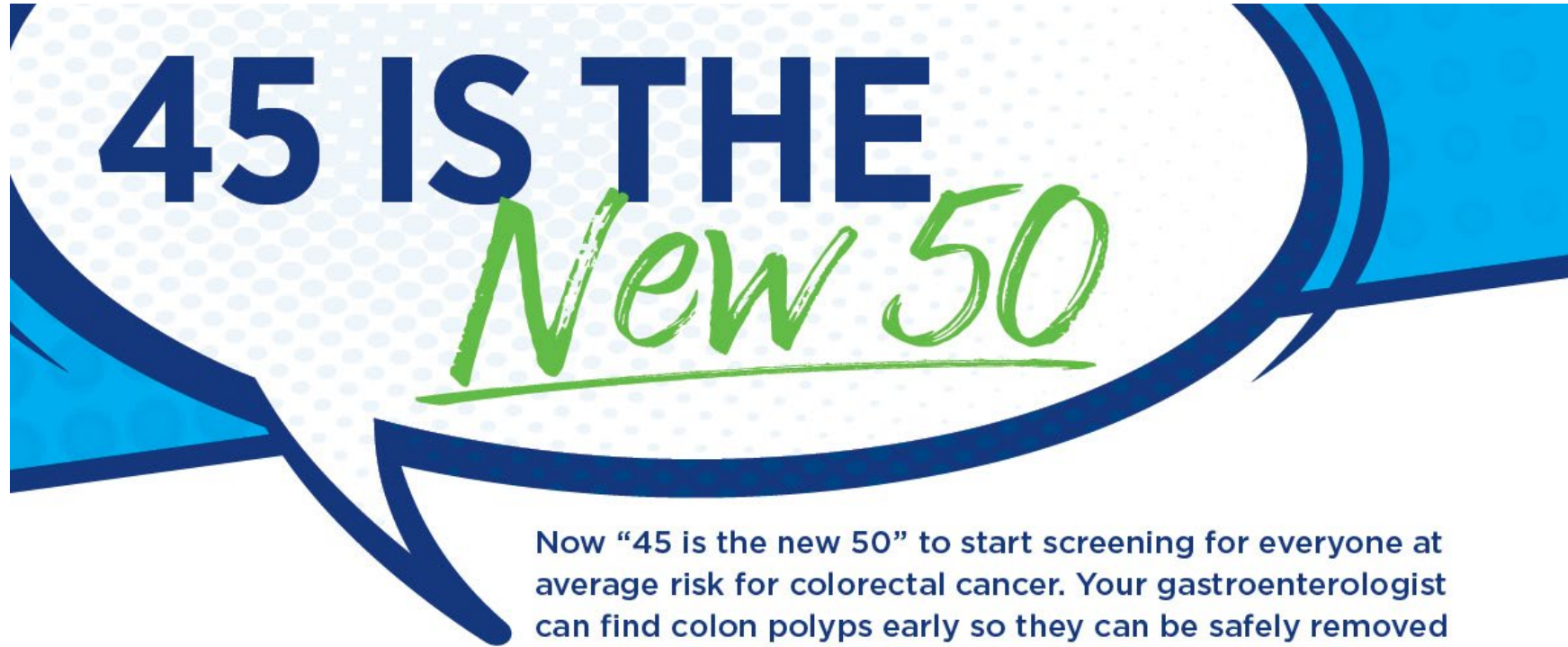
# ADR increases with patient age



**Figure 1.** ADR. Dashed line represents the ADR in men and the solid line the ADR in women.



# What about ADR in 45- to 49-Year-Olds?



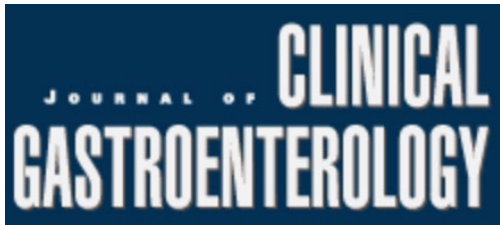
Now “45 is the new 50” to start screening for everyone at average risk for colorectal cancer. Your gastroenterologist can find colon polyps early so they can be safely removed and help to prevent colorectal cancers.



Colorectal Cancer: You Can Prevent It | [GI.ORG/COLONCANCER](https://www.gi.org/coloncancer)



# What about ADR in 45- to 49-Year-Olds?



2023

## Age Matters : Adenoma Detection Rates in Average-risk Screening Patients Aged 45 to 49 Compared With Those Aged 50 to 54

Mitsuhashi, Shuji MBBS<sup>\*</sup>; Azari, Jade BS<sup>†</sup>; Dioguardi, Vincent MD<sup>\*</sup>; Bilello, Justin MD<sup>\*</sup>; Tang, Marshall BS<sup>†</sup>; Kastenberg, David MD<sup>‡</sup> [Author Information](#) □

**Conclusions:** The study did not demonstrate equivalent ADR between the 2 age groups, with ADR being substantially lower in the age 45 to 49 group (27% vs. 34%). Despite this, the ADR in the 45 to 49 age range surpasses the established benchmark of 25%, supporting the decision to lower the screening age to 45 years. Ongoing national monitoring is essential to comprehensively evaluate the impact of these updated guidelines.

# Adenoma Detection Rates in 45–49-Year-Old Persons Undergoing Screening Colonoscopy: Analysis From the GIQuIC Registry

Mohammad Bilal, MD<sup>1</sup>, Jennifer Holub, MPH<sup>2</sup>, David Greenwald, MD<sup>3</sup>, Mark B. Pochapin, MD<sup>4</sup>, Douglas K. Rex, MD<sup>5</sup> and Aasma Shaukat, MD, MPH<sup>4</sup>

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**RESULTS:** A total of 2,806,539 screening colonoscopies were performed by 814 endoscopists. The mean ADR in the 45–49-year-old group was 28.6% compared with 31.8% for the 50–54-year-old group ( $P < 0.001$ ) and 36.3% for the 50–75-year-old group ( $P < 0.001$ ).

**DISCUSSION:** Endoscopists might see a small drop in their ADR once a higher proportion of 45–49-year-old patients start undergoing screening colonoscopy.

The ASGE currently recommends an  
ADR of 25%!

# ADR is also increasing every year!

**AJG** The American Journal of  
GASTROENTEROLOGY

2021

## Benchmarking Adenoma Detection Rates for Colonoscopy: Results From a US-Based Registry

Aasma Shaukat, MD, MPH<sup>1,2</sup>, Jennifer Holub, MPH<sup>3</sup>, Irving M. Pike, MD<sup>4</sup>, Mark Pochapin, MD<sup>5</sup>, David Greenwald, MD<sup>6</sup>, Colleen Schmitt, MD, MHS<sup>7</sup> and Glenn Eisen, MD, MPH<sup>8</sup>

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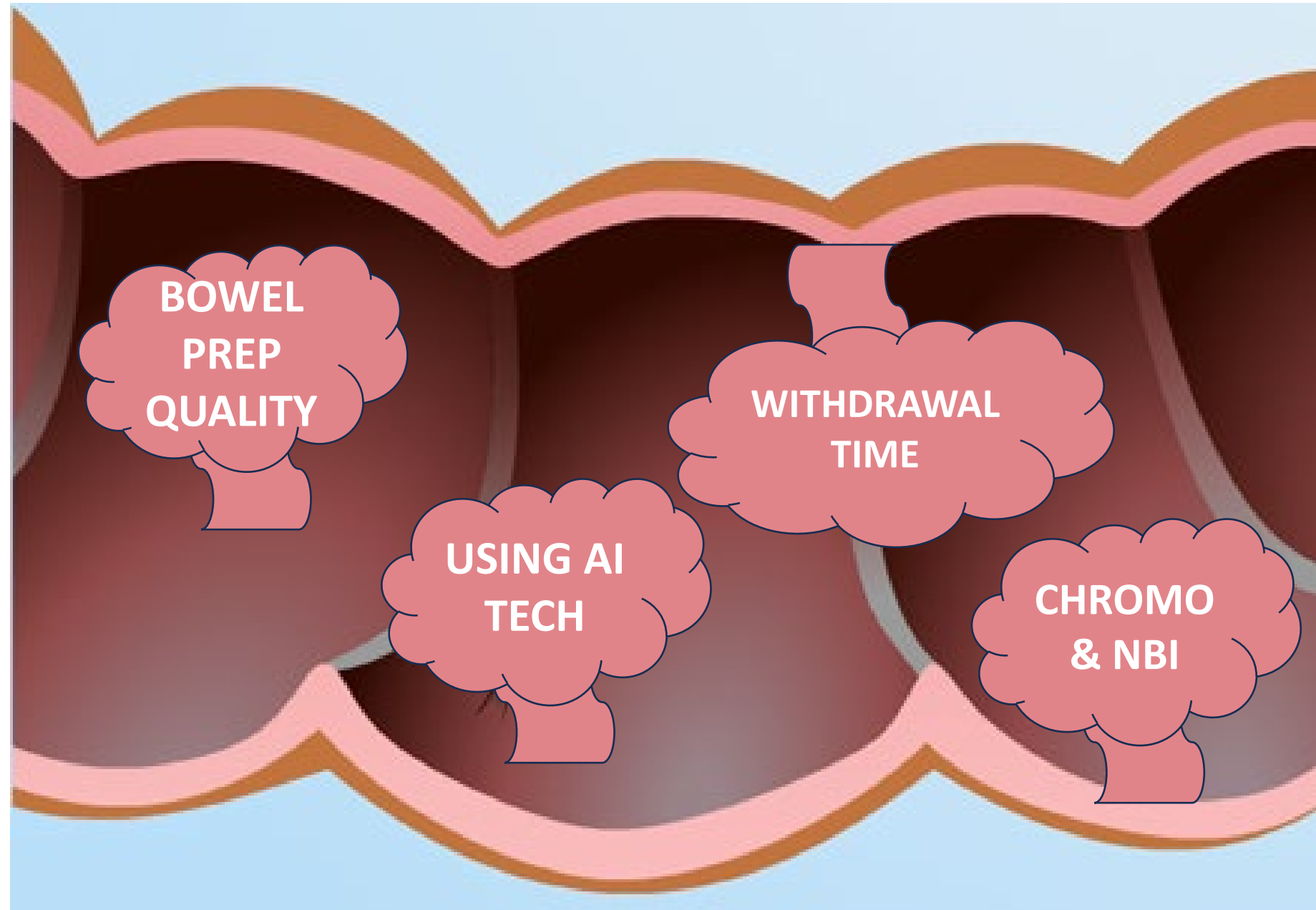
**INTRODUCTION:** Adenoma detection rate (ADR) is highly variable across practices, and national or population-based estimates are not available. Our aim was to study the ADR, variability of rates over time, and factors associated with detection rates of ADR in a national sample of patients undergoing colonoscopy.

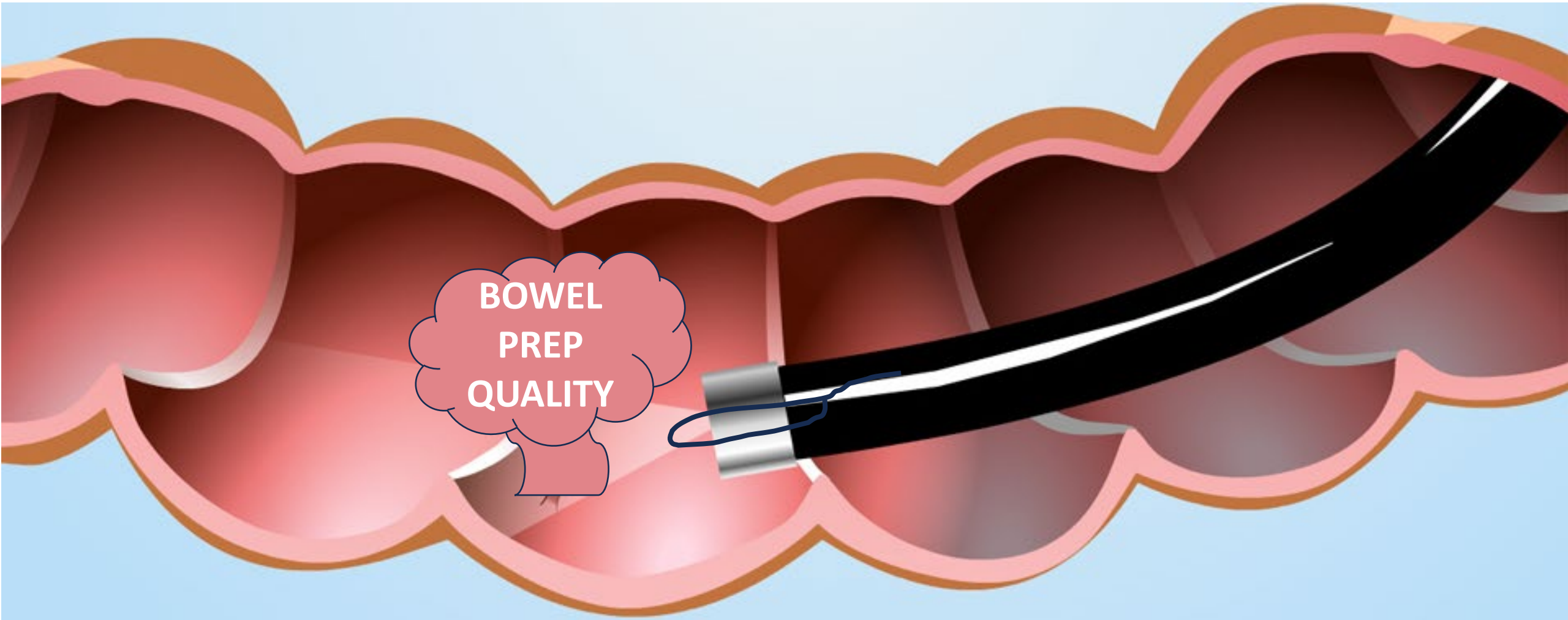
**METHODS:** We used colonoscopies submitted to the GI Quality Improvement Consortium, Ltd. registry from 2014 to 2018 on adults aged 50–89 years. We used hierarchical logistic models to study factors associated with ADR.

**RESULTS:** A total of 2,646,833 colonoscopies were performed by 1,169 endoscopists during the study period. The average ADR for screening colonoscopies per endoscopist was 36.80% (SD 10.21), 44.08 (SD 10.98) in men and 31.20 (SD 9.65) in women. Adjusted to the US population, the ADR was 39.08%. There was a significant increase in ADR from screening colonoscopies over the study period from 33.93% in 2014 to 38.12% in 2018.

**DISCUSSION:** The average ADR from a large national US sample standardized to the US population is 39.05% and has increased over time.

# Strategies to Improve ADR





**BOWEL  
PREP  
QUALITY**

# Consequences of Suboptimal Bowel Prep

- Missed lesions
- Increased risk of procedural complications
- Need for further procedures
- Additional missed work days



**Bowel preparation with split-dose polyethylene glycol before colonoscopy: a meta-analysis of randomized controlled trials** CME

Todd W. Kilgore, MD, Abdillahi A. Abdinoor, MD, Nicholas M. Szary, MD, Samuel W. Schowengerdt, BS,

Jamie R.  
John B.  
ColumbClinical Gastroenterology  
and Hepatology

2012

**4-Liter Split-Dose Polyethylene Glycol Is Superior to Other Bowel Preparations, Based on Systematic Review and Meta-analysis**

Gastroenterology

BRINTHA K. ENES

\*Division of Gastroenterology

§Section of Digestive Diseases

**Split-Dose Preparations Are Superior to Day-Before Bowel Cleansing Regimens: A Meta-analysis** 2015Myriam Martel,<sup>1,2</sup> Alan N. Barkun,<sup>1,3</sup> Charles Menard,<sup>4</sup> Sophie Restellini,<sup>5</sup> Omar Kherad,<sup>6</sup> and Alain Vanasse<sup>2</sup><sup>1</sup>Division of Gastroenterology,  
McGill University, Montreal  
of Sherbrooke, Sherbrooke  
University Hospital, and**AJG** The American Journal of  
GASTROENTEROLOGY

2019

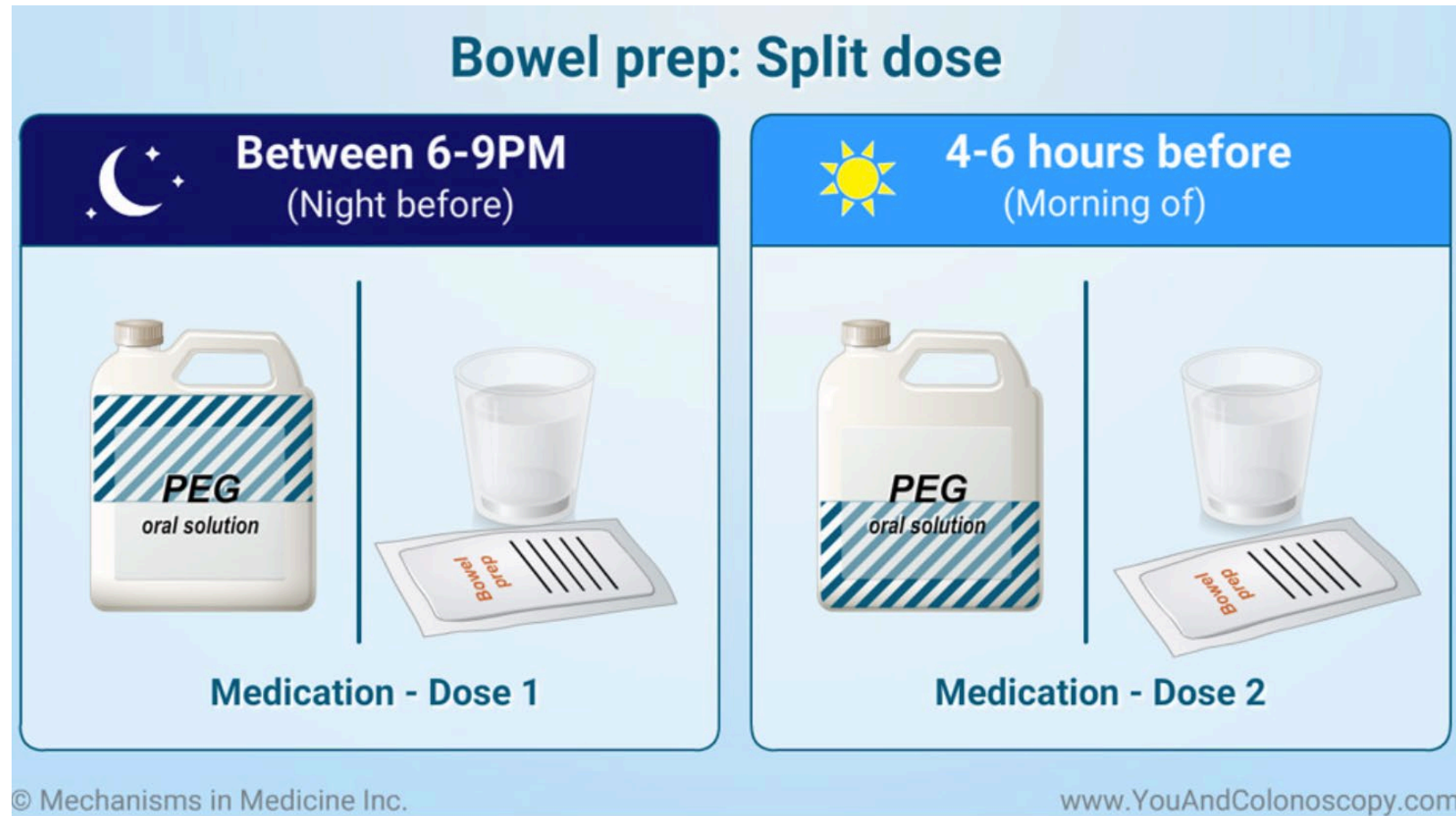
**The Efficacy of Split-Dose Bowel Preparations for Polyp Detection: A Systematic Review and Meta-Analysis**Kathleen Zawaly, BSc<sup>1</sup>, Colin Rumbolt, MD<sup>2</sup>, Ahmed M. Abou-Setta, MD, PhD<sup>1,3</sup>, Christine Neilson, MLIS<sup>4</sup>, Rasheda Rabbani, PhD<sup>1,3</sup>, Ryan Zarychanski, MSc, FRCP, MD<sup>1,2,5</sup> and Harminder Singh, MD, MPH, FRCP(C)<sup>1,2,5</sup>

# Bowel Preparation Quality



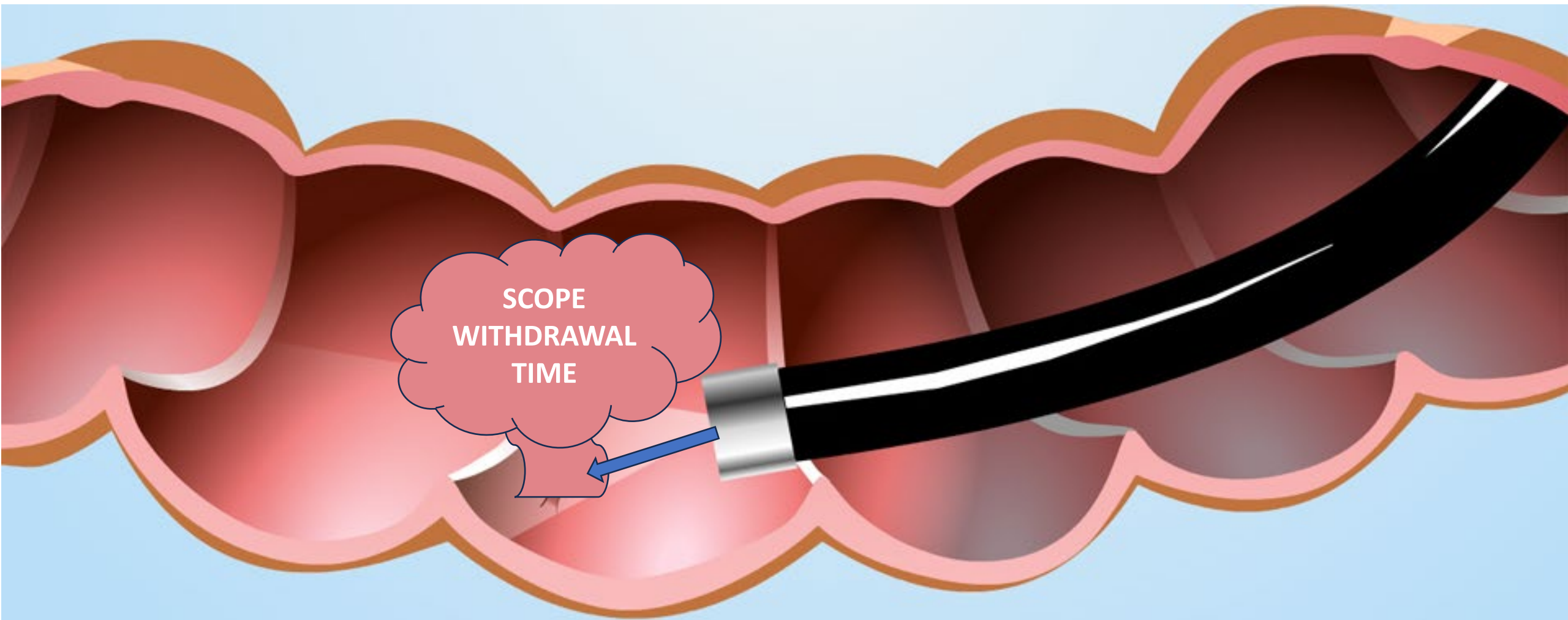
**A SPLIT-DOSE BOWEL PREP  
IS SUPERIOR TO A DAY  
BEFORE BOWEL  
PREPARATION**

# Split-Dose Prep: How It Works



(Split dose preps exist for many bowel prep solutions)

Patients complete second half of bowel prep 2 HOURS before procedure time

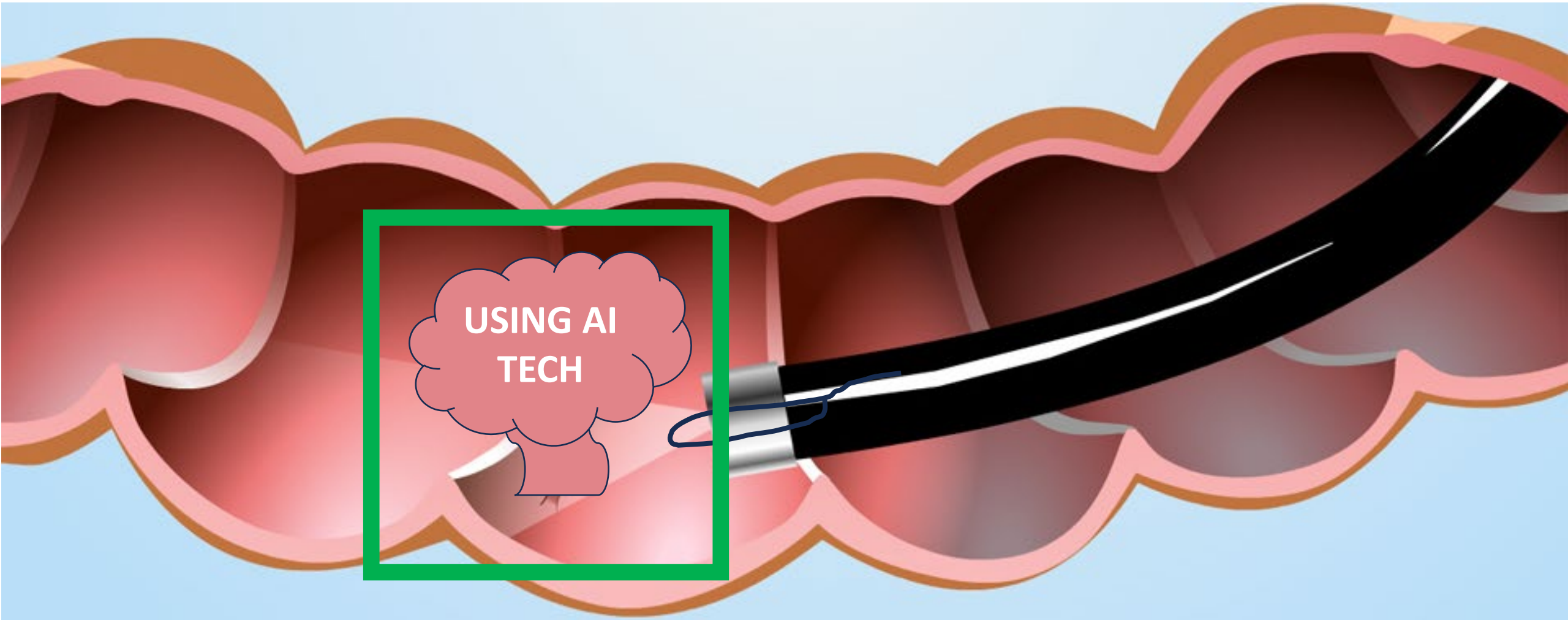


SCOPE  
WITHDRAWAL  
TIME

# Colonoscope Withdrawal Time



- The withdrawal time of at least **6 minutes** was introduced as the standard for mean withdrawal time of negative colonoscopies in mid-2000s
- Since then, multiple studies have demonstrated improved ADR with **8- or 9- minute withdrawal times**

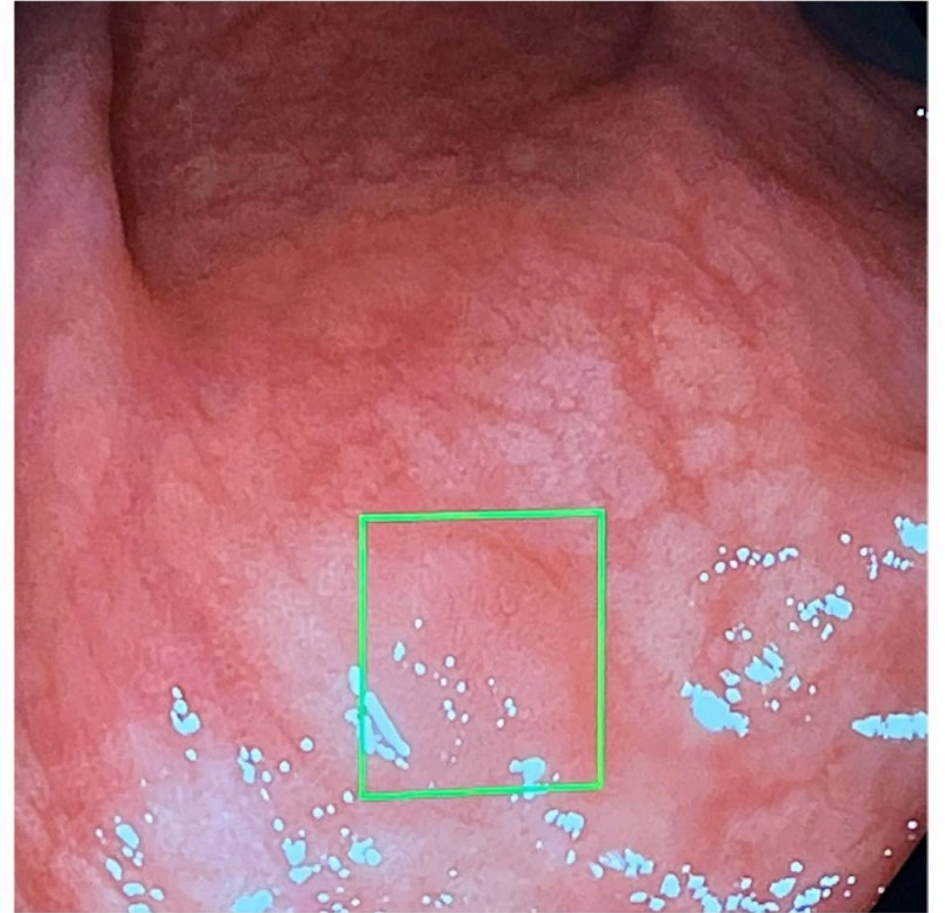


USING AI  
TECH

# Use of Artificial Intelligence (AI) Technologies

## Computer Aided Detection (CADe)

- Can reduce adenoma miss rate (AMR)
- Can reduce sessile serrated lesion miss rate



**Fig. 1** A commercially available CADe system highlights a subtle flat polyp

META-ANALYSIS

2023

## **Effect of computer-aided colonoscopy on adenoma miss rates and polyp detection: A systematic review and meta-analysis**

Sagar Shah,<sup>\*</sup> Nathan Park,<sup>†</sup> Nabil El Hage Chehade,<sup>‡</sup> Anastasia Chahine,<sup>†</sup> Marc Monachese,<sup>†</sup> Amelie Tiritilli,<sup>†</sup> Zain Moosvi,<sup>§</sup> Ronald Ortizo<sup>†</sup> and Jason Samarasena<sup>†</sup> 

- Reduced adenoma miss rate by 65%
- Reduced sessile-serrated miss rate by 78%
- ADR increased by 52%
- 93% increase in number of adenomas detected > 10mm per colonoscopy



# Artificial Intelligence-Aided Colonoscopy Does Not Increase Adenoma Detection Rate in Routine Clinical Practice

Idan Levy, MD<sup>1</sup>, Liora Bruckmayer, MD<sup>2</sup>, Eyal Klang, MD<sup>3</sup>, Shomron Ben-Horin, MD<sup>1</sup> and Uri Kopylov, MD<sup>1</sup>

*Am J Gastroenterol* 2022;117:1871–1873. <https://doi.org/10.14309/ajg.0000000000001970>

- Looking at real-world clinical impact of real-time AI technology for routine procedures
- AI-assisted group had lower ADR and lower number of adenomas detected per colonoscopy
- AI-assisted group had significantly shorter procedure times

# Endoscopist-Level and Procedure-Level Factors Associated With Increased Adenoma Detection With the Use of a Computer-Aided Detection Device

Aasma Shaukat, MD, MPH<sup>1</sup>, David R. Lichtenstein, MD<sup>2</sup>, Daniel C. Chung, MD<sup>3</sup>, Yeli Wang, PhD<sup>4</sup>, Emma E. Navajas, BS<sup>4</sup>, Daniel R. Colucci, BS<sup>4</sup>, Shrujal Baxi, MD<sup>4</sup>, Sahin Coban, MD<sup>5</sup> and William R. Brugge, MD<sup>6</sup>

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**INTRODUCTION:** To investigate the impact of procedure-related and endoscopist-related factors on the effectiveness of a computer-aided detection (CADe) device in adenomas per colonoscopy (APC) detection.

**METHODS:** The SKOUT clinical trial was conducted at 5 US sites. We present prespecified analyses of procedure-related and endoscopist-related factors, and association with APC across treatment and control cohorts.

**RESULTS:** There were numeric increases in APC between SKOUT vs standard colonoscopy in community-based endoscopists, withdrawal time of  $\geq 8$  minutes, for endoscopists with  $>20$  years of experience, and endoscopists with baseline adenoma detection rate  $<45\%$ .

**DISCUSSION:** The application of CAdE devices in clinical practice should be carefully evaluated. Larger studies should explore differences in endoscopist-related factors for CAdE.

Specific situations where CAdE might be helpful: experienced endoscopists ( $\geq 11$  years), withdrawal time  $\geq 8$  minutes, adequate bowel prep

# Use of AI-Assistance for ADR?

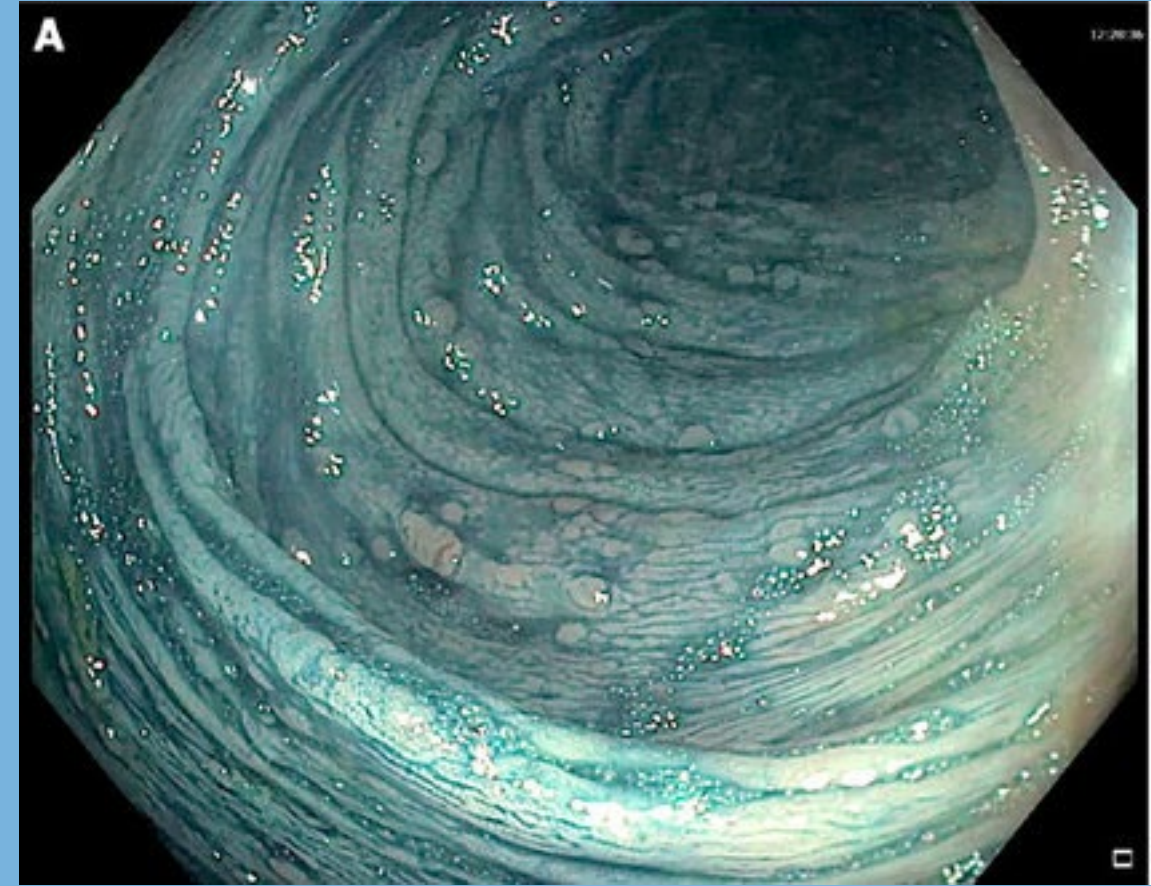
- In short, CADe technology shows great promise for improving ADR and reducing adenoma miss rates
- The optimal circumstances for use are still under investigation



**ADVANCED  
IMAGING  
TECHNIQUES**

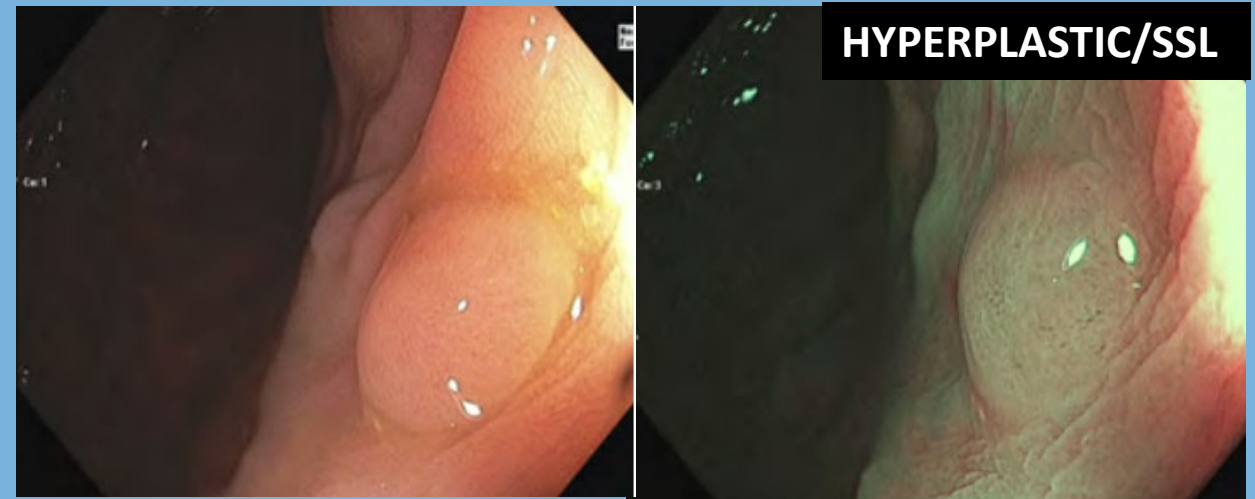
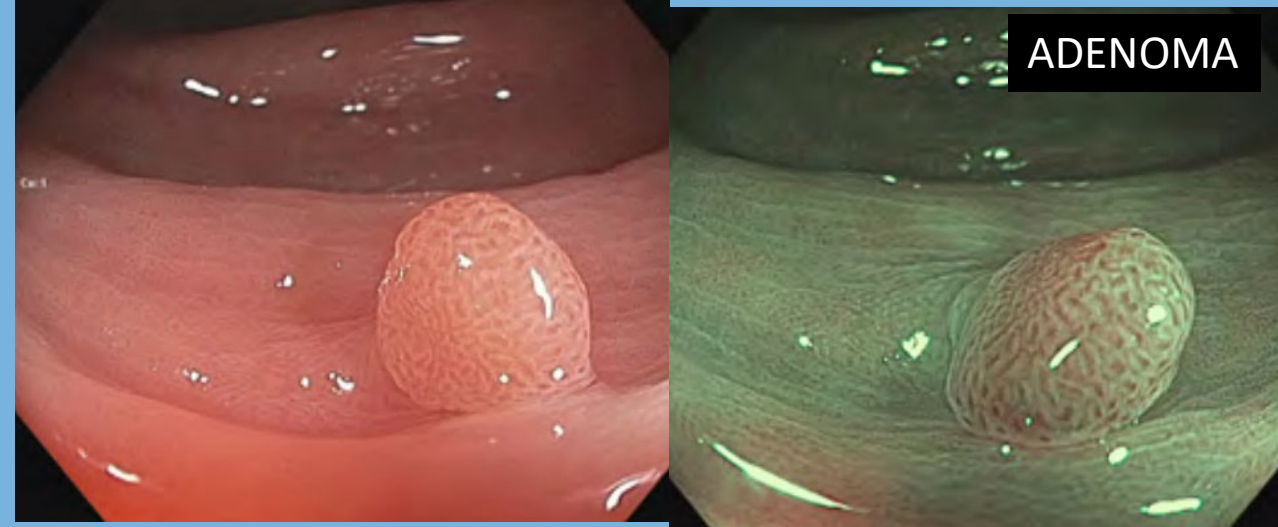
# Chromoendoscopy

- Offers enhanced visualization of subtle lesions
- Improved identification of:
  - Diminutive lesions
  - Flat lesions
  - Dysplasia in patients with IBD
  - Dysplasia in patients with hereditary cancer syndromes
- Studies do show improved ADR for average-risk CRC screening
- May not be realistic



# Narrow Band Imaging (NBI)

- Helpful in distinguishing adenomatous from non-adenomatous polyps in real-time
- Most studies demonstrate improved diagnosis but NOT improved detection



# Narrow Band Imaging (NBI)

Gastroenterology ▶ [aga](#)

## Narrow-Band Imaging for Detection of Neoplasia at Colonoscopy: A Meta-analysis of Data From Individual Patients in Randomized Controlled Trials



Nathan S. S. Atkinson,<sup>1,2,3,\*</sup> Shara Ket,<sup>1,2,4,5,\*</sup> Paul Bassett,<sup>6</sup> Diego Aponte,<sup>7</sup> Silvia De Aguiar,<sup>8</sup> Neil Gupta,<sup>9</sup> Takahiro Horimatsu,<sup>10</sup> Hiroaki Ikematsu,<sup>11</sup> Takuya Inoue,<sup>12</sup> Tonya Kaltenbach,<sup>13</sup> Wai Keung Leung,<sup>14</sup> Takahisa Matsuda,<sup>15</sup> Silvia Paggi,<sup>16</sup> Franco Radaelli,<sup>16</sup> Amit Rastogi,<sup>9</sup> Douglas K. Rex,<sup>17</sup> Luis C. Sabbagh,<sup>7</sup> Yutaka Saito,<sup>15</sup> Yasushi Sano,<sup>18</sup> Giorgio M. Saracco,<sup>19</sup> Brian P. Saunders,<sup>20</sup> Carlo Senore,<sup>21</sup> Roy Soetikno,<sup>22</sup> Krishna C. Vemulapalli,<sup>17</sup> Vipul Jairath,<sup>22,23</sup> and James E. East<sup>1,2</sup>

- Meta-analysis found that ADR improved with NBI in patients who had “best” bowel prep quality
- Effective for both adenomas and serrated lesions

# Some other tools and strategies

- Use of distal attachment cap
- Water exchange
- Additional observer during colonoscopy
- Attending educational events (like this one!)





# Conclusion

- **Benchmark ADR is 25% for all-comers**
  - 20% female / 30% male
- **Split dose bowel prep** should be employed for optimal bowel prep quality
- Ensure adequate scope withdrawal time – at least **8-9 minutes**
- AI assistance is a promising technology for improved ADR
- Advanced imaging techniques may help in certain circumstances

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