2023 SCSG
GI SYMPOSIUM

Hot Topics From DDW23: Colon and Lower GI Abstracts

Folasade May, MD, PHD, MPhil

Samir Gupta, MD, MSCS

Disclosures

Folasade P. May, MD, PhD

Consultant/Advisor for: Kimberly-Clarke/Cottonelle; Takeda; Seed Global Health; Exact Sciences, Freenome; Geneoscopy; InterVenn

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Employee of: UCLA Health; Veterans Health Administration

I will not discuss off label use and/or investigational, device, product or medication use in my presentation.

@drfolamay

Presentation Overview

- Evidence for changing epidemiology of CRC

- Updates in CRC disparities

- High risk CRC groups

- Artificial intelligence and colonoscopy

- New in CRC screening tests

- Risk stratification for CRC

- CRC screening interventions

# Birth Cohort Effect for Early-Onset CRC Appears to Be Global

"Global Increases in Incidence Rates of Colorectal Cancer Across Birth Cohorts"

Timothy A. Zaki,
Caitlin C. Murphy

- **Aim:** To estimate the birth cohort effect of early-onset CRC globally (1990–2019).

- **Design:** Age-period-cohort analysis in 7 world regions: East Asia, Europe and Central Asia, Latin America and the Caribbean, the Middle East and North Africa, North America, South Asia, and Sub-Saharan Africa.

- **Data source:** Global Health Data Exchange.

- **Methods:**

  – 5-year age groups and time periods to create 17 birth cohorts.

  – Estimated the ratio of age-specific incidence rates of CRC in each birth cohort relative to the 1950-54 birth cohort.

  – Reported incidence rate ratios and 95% confidence intervals.

Birth Cohort Effect for Early-Onset CRC Appears to Be Global
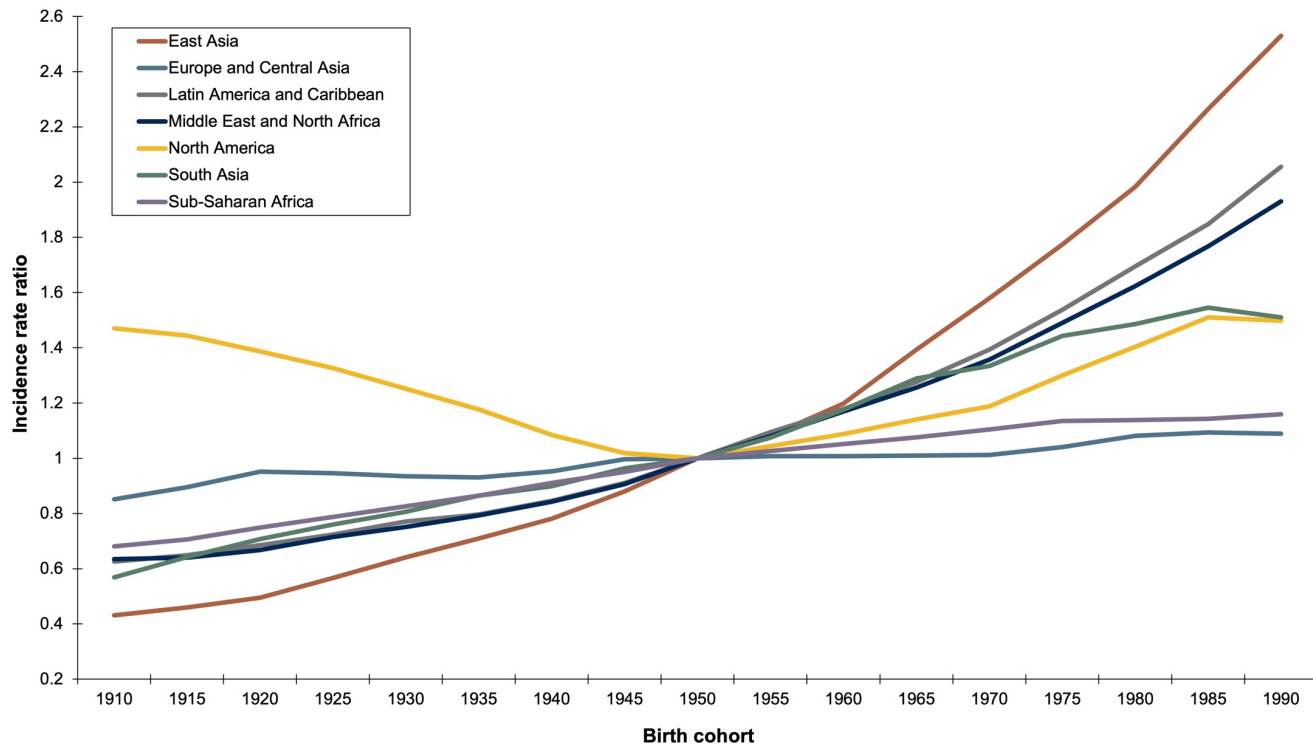
Results

- CRC incidence increased in all regional birth cohorts except Europe and Central Asia after 1950–54.

- Incidence was up to 2 times higher for persons born in 1980s/90s (v. born in 1950s).

- Similar pattern in regions despite differences in age structure, screening programs, diet, lifestyle, and diagnostics.

Prevalence of Adenomas and Sessile Serrated Lesions Appears to Be Similar in Age 45–49 and 50–54

"Prevalence of Detected Adenomas and Sessile Serrated Lesions In 45-49-year-old Persons Undergoing Colonoscopy: A Systematic Review & Meta-analysis"

Mohamed Abdallah, Mouhand F. Mohamed, Fouad Jaber, Abubaker Abdalla, Michelle S. Baliss, Jason Eckmann, Mohammad Bilal, Aasma Shaukat

- **Aim:** To report the prevalence of detected adenomas and SSLs in 45–49-year-old individuals undergoing colonoscopy.

- **Methods:**

  - Search of MEDLINE, EMBASE, SCOPUS, Web of Science, ClinicalTrials.gov, and the Cochrane database through 10/2022.

  - Identified studies reporting prevalence of adenomas and SSLs in 45-49-year-old persons who underwent colonoscopy for any indication, excluding high-risk conditions.

  - Generated pooled prevalence rates with 95% confidence intervals (CI) and random-effects.

  - I^2 was used to adjudicate heterogeneity.

Prevalence of Adenomas and Sessile Serrated Lesions Appears to Be Similar in Age 45–49 and 50–54

Results:

- 15 studies met inclusion criteria (USA, 9; South Korea, 2; China, 2; Canada, 1; France, 1).
- Adenomas:
  - Pooled prevalence (14 studies) was 22.3% (95% CI 18.8–26.2%, I2=98%).
  - Pooled ADR (6 studies) was 27.3% (95% CI 24–30.8%, I2 =96%).
- SSLs:
  - Pooled prevalence (6 studies) was 6.3% (95% CI 3.8–10.5%, I2 =97%).
  - Insufficient data to calculate SSL detection rate.
- Significant heterogeneity of studies.
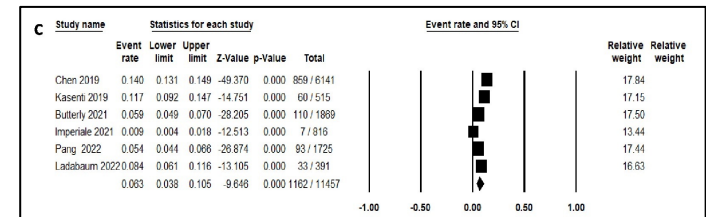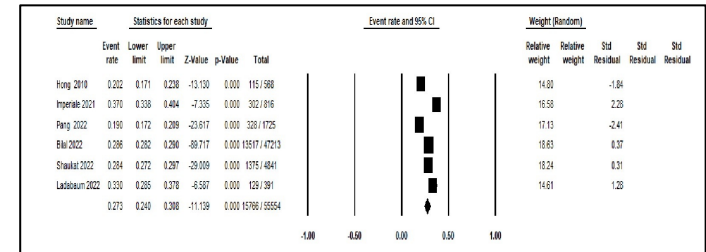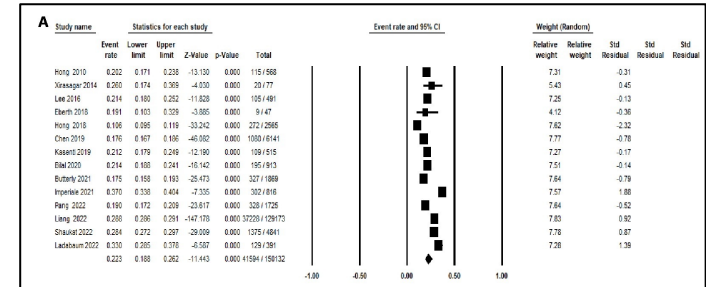
"Prevalence of adenomas, SSLs, and ADR in the 45–49 age group is comparable to that recommended in persons 50–54."

Updates in CRC Disparities

COVID-19 Impacted Provider Recommendations for CRC Screening

"Impact of the COVID-19 Pandemic on Racial and Socio-economic Disparities on Receiving Colorectal Cancer Screening Recommendations"

Saeed Soleymanjahi, Young-Rock Hong, Juhan Lee, Ruth Kvistad, Michelle L. Hughes, Xavier Llor

Aim:

- To explore the impact of COVID-19 pandemic on CRC screening recommendations

Methods:

- Retrospective cross-sectional study
- National Health Interview Survey data (2019, 2020).
- Adults age 50-75 with no prior CRC screening
- Multivariable logistic model to identify factors associated with the likelihood of receiving screening recommendations from a provider
- To determine if the COVID pandemic disproportionally impacted screening recommendations for specific populations

COVID-19 Impacted Provider Recommendations for CRC Screening

Results:

- 20% drop in referral to screening rate in 2021 (estimated 1.2 million fewer Americans in 2021)

- Lower recommendation rates for uninsured, low income, and non-White populations.

- Disparities related to race and insurance coverage became more pronounced in 2021. (Worst for Hispanic)

A lower proportion of eligible individuals received recommendations for CRC screening from a provider during the COVID-19 pandemic.
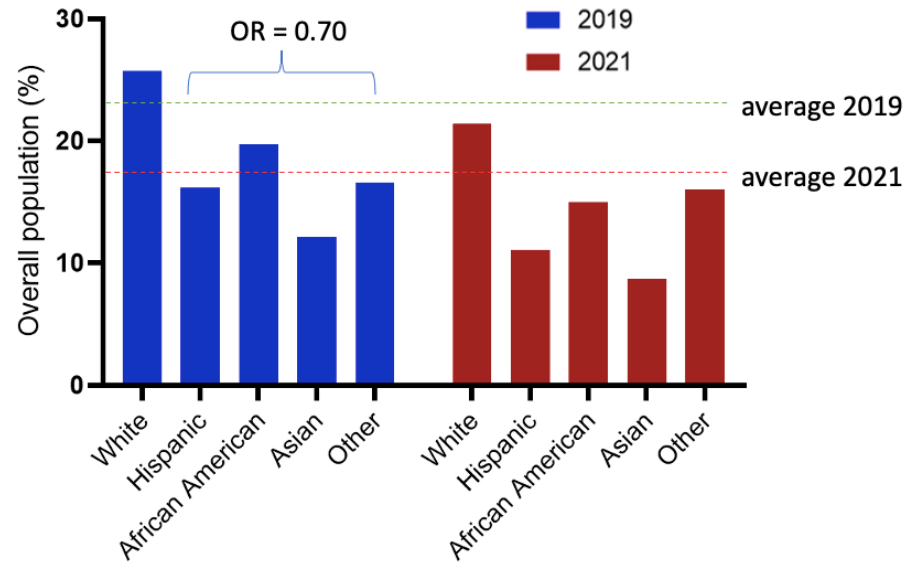
Evidence of Slower COVID-19 Recovery in Under-Resourced Populations

"Colorectal Cancer Screening Rates at Federally Qualified Health Centers in The United States From 2020 to 2021: Incomplete Rebound and Worsening Disparities"

Matthew Y. Zhao, Yvonne Lei, Megan R. McLeod, Jayraan Badiee, Artin Galoosian, Folasade P. May

Aim:

- To assess changes in CRC screening rates between 2020 and 2021 in community health clinics.

Methods:

- Series of cross-sectional analyses

- Uniform Data System (2014–2021).

- Determined the change in the CRC screening rate from 2020 to 2021 for each community health center nationally.

- Used multivariate mixed effects linear regression models to determine health center characteristics associated with the change in CRC screening rates.

Evidence of Slower COVID-19 Recovery in Under-Resourced Populations

Median CRC Screening Rates in Community Health Centers
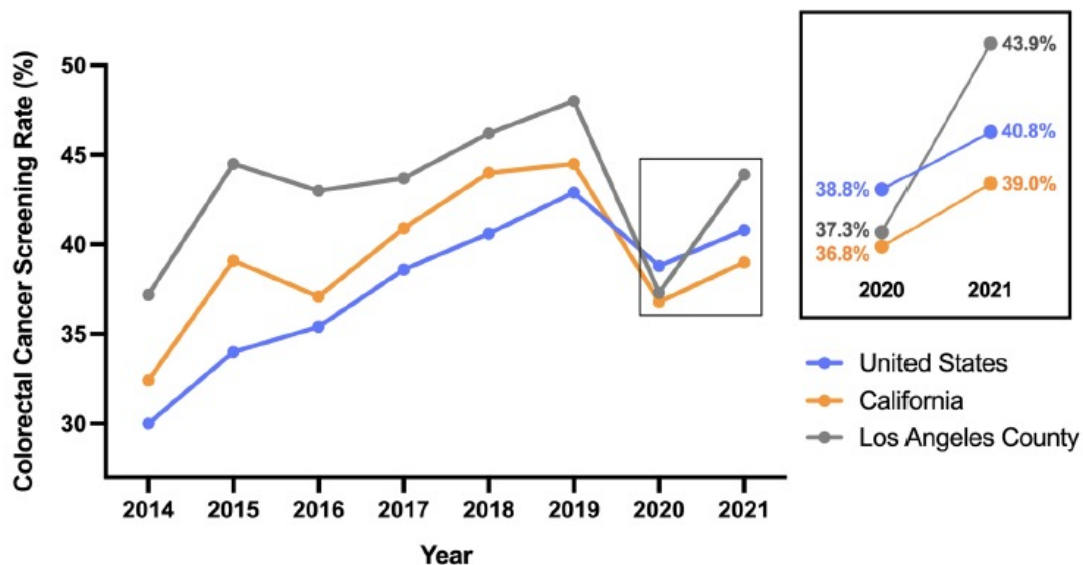
Results:

- Screening rates increased from 30.0% in 2014 to 42.9% in 2019, declined to 38.8% in 2020, and then increased to 40.8% in 2021.

- Screening rates in California (median 36.8%; n=166) and Los Angeles (median 37.3%; n=58) fell below the national FQHC screening rate for the first time in 2020.

- Recovery did not occur in majority-Black community health centers, where screening rates, on average, continued to decline.
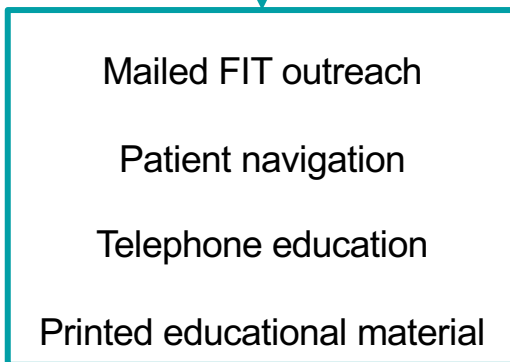
Interventions to Increase CRC Screening in Under-Resourced Populations

"Interventions to Improve Colorectal Cancer Screening Among Medically Underserved Populations: A Systematic Review"

Justine Vella, Sagar Patel, Brianna Bowman, Seyed Javid Taghados, Sloane Lipkin, Christopher D'Adamo, Joshua Wolf

Systematic review of 572 studies resulted in 33 separate interventions from 2003 to 2018

Effective "uni-component" Interventions

Mailed FIT outreach

Patient navigation

Telephone education

Printed educational material

Effective "multi-component" Interventions

Providing stool Kits

Printed education material

Educational video

Patient reminder letters

Free colonoscopy

Home visit
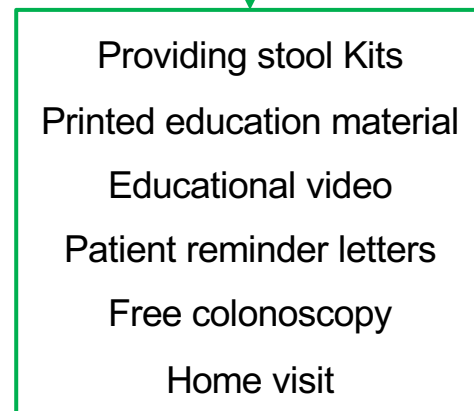
CRC Screening in Lynch Syndrome

- Evolving recommendations for CRC screening among Lynch syndrome carriers.

- Current National Comprehensive Network stratify colonoscopy surveillance recommendations based on affected gene:

  - MLH1 and MSH2 Lynch syndrome
    - Start age 20–25 or 2–5 years earlier that earliest family age at diagnosis, repeat q 1–2 years
  - MSH6 and PMS2 Lynch syndrome
    - Considered lower risk phenotype
    - Start age 30–35 or 2–5 years earlier that earliest family age at diagnosis, repeat q 1–3 years

Caution in Delaying or Extending Surveillance for MSH6 and PMS2 Lynch Syndrome Carriers

"Colorectal Cancer in MSH6 and PMS2 Lynch Syndrome Patients: Clinical Phenotype in a U.S. Population"

Tannaz Guivatchian, Samara Rifkin, Veronica Greve, Julia Martinez, Erika Koeppe, Elena M. Stoffel

Aim: To characterize clinical phenotypes of MSH6 and PMS2 Lynch Syndrome (LS) patients in a U.S. population.

Methods:

- Setting and Population:
    - One large U.S. academic institution.
    - Identified all patients diagnosed with LS with genetically confirmed germline pathogenic variants in MSH6 and PMS2.
      (Biallelic variants excluded).
- Chart reviews for demographics, cancer history, and colonoscopy outcomes.
- Analyses:
    - Compared characteristics of individuals with and without personal history of CRC (bivariate analyses).
    - Determined odds of XXXXX in CRC cases and non-CRC control cases (logistic regression).

Caution in Delaying or Extending Surveillance for MSH6 and PMS2 Lynch Syndrome Carriers

Results:

- *223 individuals with MSH6 (n=141) and PMS2 (n=84)*

- *41 (18%) had a personal history of CRC, and 70 (31%) reported having a first degree relative with CRC. 19 of the 41 (46%) CRC cases were diagnosed before age 50, with 9 (5 MSH6, 4 PMS2) diagnosed before age 40, 5 (3 MSH6, 2 PMS2) diagnosed before age 35, and 4 (3 MSH6, 1 PMS2) diagnosed before age 30. All 9 individuals with CRC under 40 were diagnosed at their first colonoscopy and only 2 reported a family history of CRC in a first degree relative. Additionally, 5 patients diagnosed with CRC above age 40 were classified as having interval cancers (CRC diagnosed less than 5 years after a prior colonoscopy). Personal history of 1 or more non-CRC LS-associated cancers, smoking history, and family history were not significantly associated with risk for CRC.*

Conclusion: *Although lifetime cancer risks may be lower compared to MSH2 and MLH1-associated LS, 1 in every 5 MSH6 or PMS2 carriers in our cohort had a personal history of CRC, half of which were diagnosed before age 50. Furthermore, the majority of the young onset cancers occurred in patients without a family history of colon cancer. Delaying or extending colonoscopic surveillance for MSH6 and PMS2 carriers could potentially result in CRC diagnoses that could otherwise have been prevented.*

"Tailoring is challenging.

"Follow guidelines but consider baseline colonoscopy at diagnosis for all even if under age 30."

Computer-Aided Detection Improves Colonoscopy Quality

"Adoption of a Computer-aided Detection System Significantly Improves Polyp Detection in Routine Clinical Practice"

Rajesh N. Keswani, Urvi Thakkar, Alexandra Sals, John E. Pandolfino

Aim: To assess the impact of computer aided detection (CADe) on polyp detection in a large cohort of high-volume colonoscopists.

Methods:

- 4 GI Genius Medtronic CADe system implemented in a single large academic medical center (12 endoscopy rooms).

- Colonoscopists rotated through "CADe" and "non-CADe" rooms from March 2022 to August 2022 (6 months).

- Colonoscopists who performed >100 colonoscopies included in analysis.

- Primary outcome: screening and surveillance colonoscopy polypectomy rate.

- Secondary outcomes: screening colonoscopy ADR and serrated detection rate (SDR).

Screening Colonoscopy Quality Indicators

Quality Indicator	Performance Goal
Pre-procedure	
Informed consent obtained	>98%
Documentation of appropriate indication	>80%
Documentation of appropriate post-colonoscopy surveillance interval	≥ 90%
Intra-procedure	
Documentation of bowel preparation quality	>98%
Adequate bowel preparation for exam	≥85%
Documentation of cecal intubation	≥95% screening
Adenoma detection rate (ADR)	≥30% males ≥20% females ≥25% combined
Documentation of withdrawal time	>98%
Average withdrawal time for negative examinations	≥6 min
Post-procedure	
Monitor Perforation incidence	< 1:1000 screening
Monitor Post-polypectomy bleed incidence	< 1%
Monitor Post-polypectomy bleed requiring surgery	≤10%
Surveillance interval recommendation provided to patient	≥90%

*adapted from ASGE/ACG Taskforce on Quality in Endoscopy, 2015.

Computer-Aided Detection Improves Colonoscopy Quality

	CADe Not Available	CADe Available	P value
All Colonoscopists			
Screening/Surveillance Polypectomy Rate	51.7%	60.5%	<0.0001
Screening ADR	41.6%	50.6%	<0.0002
Screening SDR	14.7%	19.4%	0.006
Colonoscopists who self-reported using CADe for majority of cases			
Screening/Surveillance Polypectomy Rate	53.4%	66.5%	<0.0001
Screening ADR	39.2%	52.0%	0.0001
Screening SDR	14.5%	20.1%	0.03
Colonoscopists who self-reported using CADe for minority of cases			
Screening/Surveillance Polypectomy Rate	50.4%	54.3%	0.2
Screening ADR	43.8%	49.1%	0.1
Screening SDR	14.8%	18.8%	0.1

RESULTS:

- 21 colonoscopists and 4,820 colonoscopies.

- Screening and surveillance polypectomy rates significantly higher in CADe rooms.

- CADe majority users had significantly higher polypectomy rates in CADe rooms.

- CADe minority users did not see significant increase.

- Higher screening colonoscopy ADR and SDR when BUT for CADe majority users only.

"CADe significantly increased polypectomy rates, ADR and SDR. However, only seen for colonoscopists using CADe in majority of cases."

AI Detection System Increases Adenoma Detection in Large, Multi-Center Randomized Clinical Trial

"Use of A Novel Artificial Intelligence System Leads to the Detection of Significantly Higher Number of Adenomas During Screening and Surveillance Colonoscopy: Results From A Large, Prospective, U.S. Multi-center, Randomized Clinical Trial"

Madhav Desai, Karlee Ausk, Donald Brannan, Rajiv Chhabra, Walter Wai-Yip Chan, Michael V. Chiorean, Seth Gross, Mohit Girotra, Gregory B. Haber, Reed Hogan, Bobby Mathew Jacob, Sreeni Jonnalagadda, Lulu Iles-Shih, Navin L. Kumar, Joanna K. Law, Linda S. Lee, Otto Lin, Meir Mizrahi, Paulo A. Pacheco, Sravanthi Parasa, Jennifer Phan, Vonda Reeves, Amrita Sethi, David B. Sell, James Underwood, Nanda Venu9, Kavel Visrodia, Alina Wong, Jessica Winn, Cynthia Haden Wright, Prateek Sharma

Aim: To evaluate the impact of a novel AI system, compared to standard HD colonoscopy, for adenoma per colonoscopy (APC) measurement.

Methods:

- Novel AI detection system (EW10-EC02) that enables real-time colorectal polyp.

- Multi-center, prospective randomized trial (NCT04979962)

- Randomized average-risk patients age>=45 undergoing screening or surveillance colonoscopy:

  – Computer-assisted colonoscopy (CAC), or

  – Conventional colonoscopy (CC)

- Primary outcomes: APC and positive predictive value (PPV).

- Secondary outcomes: withdrawal time, ADR, SDR, polyp detection rate and polyp per colonoscopy.

AI Detection System Increases Adenoma Detection in Large, Multi-Center Randomized Clinical Trial

Results:

- 1033 subjects (mean age: 59.1; 49.9% male)

- Balanced randomization

- CAC v. Conventional colonoscopy:

  - APC: 0.99 ± 1.6 vs. 0.85 ± 1.5 (p=0.02)

  - Higher polyp per colonoscopy rate

  - No significant difference in the withdrawal time between groups

- PPV of a polyp being adenoma (or non-adenoma) was not inferior (<10%)

- No significant difference in detection of adenoma, sessile serrated lesions, or polyps between the 2 groups
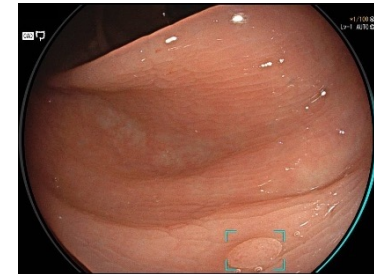
Rectangular blue box indicates polyp detected by the CADEYE system

"Novel AI detection system led to a significantly higher number of adenomas per colonoscopy compared to conventional HD colonoscopy without an increase in withdrawal time.

Findings support the use of AI-assisted colonoscopy to improve colonoscopy quality."

Thank You!

fmay@mednet.ucla.edu