

Improving you ADR

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Colonoscopy Education Day

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ADR Applying to CSP

- Assume 50% ADR in FIT positive patients
 - Out of 40 patients only 20 will have polyps
 - Out of 20 likely 15 will be found by a quick glance
- The other 5 may be behind folds or slightly more challenging
- If you visualize really well you might get 5/5
 - If average 4/5
 - If not very good day 2-3/5
- So difference between good and average day is 1/5
- But really that equates to ADR of only 2.5% higher than average
 - Not very good day is in fact only 5% lower than good
 - So it takes a lot of patients to determine differences in detection

Background Summary

- A physician's adenoma detection rate is inversely linked to interval colorectal cancer and colorectal cancer mortality
- A physician's adenoma detection rate is associated with withdrawal technique
- A physician's adenoma detection rate can be improved with intervention

Background



Interval cancers associated with ADR

- Kaminski et al. NEJM 2010
 - 45,026 individuals undergoing colonoscopy screening (186 physicians)
 - 42 interval cancers over 188,788 person-years
 - Physician's ADR associated with development of cancer ($p=0.008$)
- Corely et al. NEJM 2014
 - 314,872 colonoscopies by 136 gastroenterologists
 - 712 (0.2%) interval cancers (6 months – 10 years)
 - Physician's ADR associated with PCCRC incidence (HR 0.52, 95%CI 0.39-0.69) and death (HR 0.38, 95%CI 0.22-0.65)

3% increase in interval CRC risk and 4% increase risk of CRC death for every 1% difference in ADR

Withdrawal time

- Barclay et al. NEJM 2006
 - 7882 colonoscopies, 12 colonoscopists
 - Withdrawal time > 6 minutes associated with:
 - Increased ADR (28.3% vs 11.8%, $p < 0.0001$)
 - Increased detection of advanced adenomas (6.4% vs 2.6% $p = 0.005$)
- But, mandating a longer withdrawal time does not necessarily increase ADR
 - Due to a ceiling effect?
 - Or is the WT the key?

Withdrawal technique

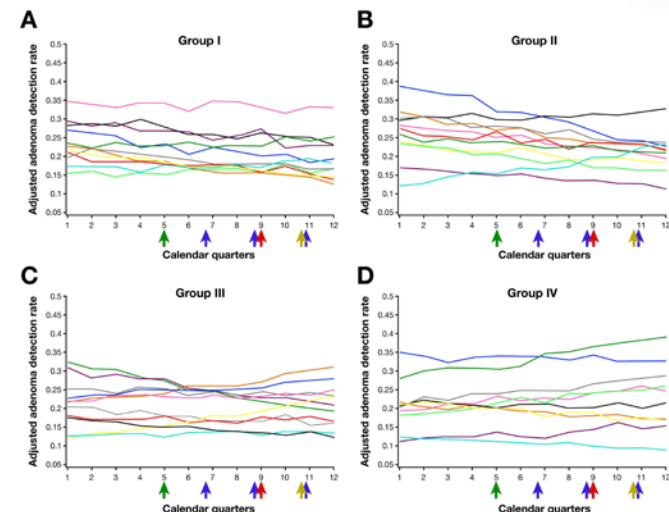
- Rex et al GIE 2000 and Lee et al GIE 2011
 - Video and live assessment of colonoscopy technique
 - Grading system (0 to 5) on the following for each area of the colon:
 - Distention
 - Cleaning
 - Time spent examining proximal folds
 - A high technique score was most associated with a physician's ADR, therefore likely withdrawal time a 'marker' for thorough examination

Withdrawal technique

- Barclay et al. CGH 2008
 - ADR on 2053 colonoscopies, 12 colonoscopists
 - Intervention
 - Mandatory 8 minutes withdrawal time
 - Education session on technique
 - Distention
 - Cleaning
 - Examination of proximal side of folds and flexures
 - Re-inspection of segments
 - Torque maneuvers to visualize between folds
 - Evaluated 2325 colonoscopies, 12 colonoscopists
 - ADR increased post-intervention (34.7% vs 23.5% $p < 0.0001$)

Opposing View

- 47,000 screening colonoscopies in average risk patients
- Minnesota study
- 5 specific interventions
 - Review of individual ADR
 - Review of rates in partnership meetings
 - Education –importance of WT
 - Financial consequences for not achieving 6 minute WT in 95% of cases
- Results
 - ADR ranged from 10-29%
 - No change with any intervention



In summary



- Low ADR is associated with interval colon cancers
- ADR is related to colonoscopy technique, WT likely a serrogate for adequate distention, looking behind folds, 350 degree view and removing debris
- ADR 'can' be improved with education

Improving ADR

- Pre procedure
- Intra procedure
- Post procedure



Pre: Physician Characteristics with High ADR-ie Have them do colonoscopies!

- Retrospective cohort study, all colonoscopy 10/13-09/15 across physicians from 4 health systems
- Physician ADR was risk adjusted for differences in patient population and procedure indication.
 - 201 physicians performing > 30 colonoscopies totaling 104,618 exams.
- Results
 - Mean ADR 33.2% (range 6.3%-58.7%)
 - Higher ADR was seen among female physicians (4.2 percentage points higher than men), gastroenterologists (9.4 percentage points higher than nongastroenterologists, $P < .001$), and physicians with 9 years since their residency completion (6.0 percentage points higher than physicians who have had 27-51 years of practice, $P = .004$).
- Conclusions: Gastroenterologists, female physicians, and more recently trained physicians had higher performance in ADR

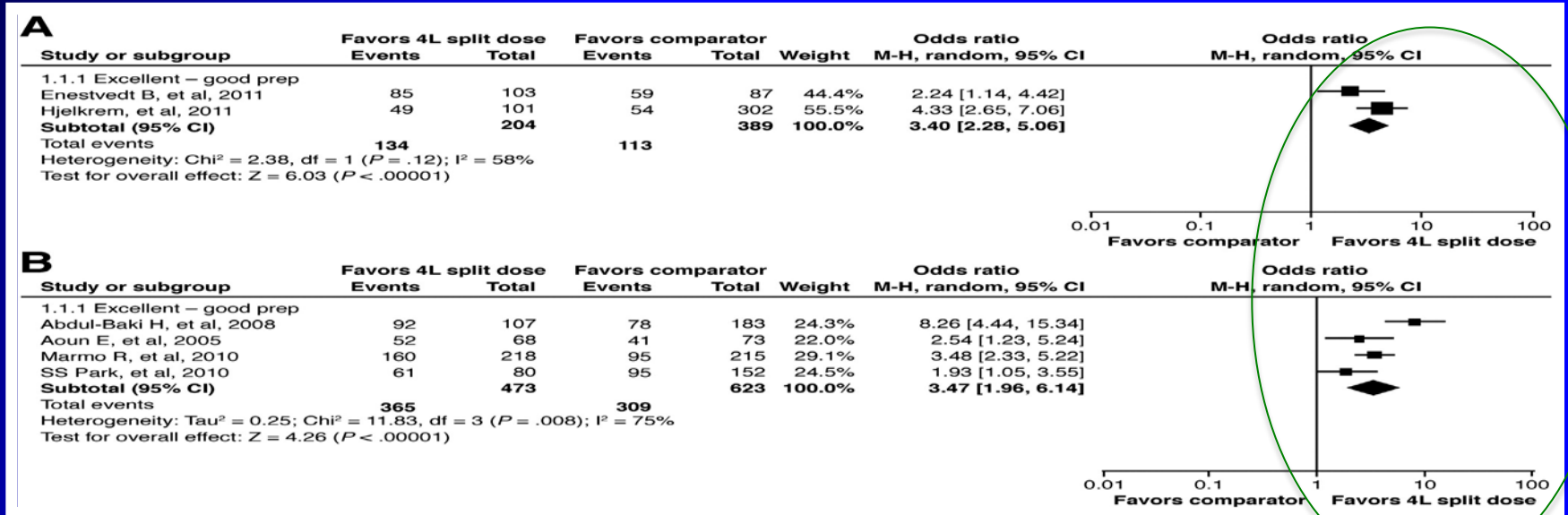
FDA-Approved Bowel Preparations

Recommendations

1. Selection of a bowel-cleansing regimen should take into consideration the patient's medical history, medications, and, when available, the adequacy of bowel preparation reported from prior colonoscopies (*Strong recommendation, moderate-quality evidence*)
2. A split-dose regimen of 4 L PEG-ELS provides a high quality bowel cleansing (*Strong recommendation, high-quality evidence*)
3. In healthy non-constipated individuals, a 4-L PEG-ELS formulation produces a bowel-cleansing quality that is not superior to a lower-volume PEG formulation (*Strong recommendation, high-quality evidence*)

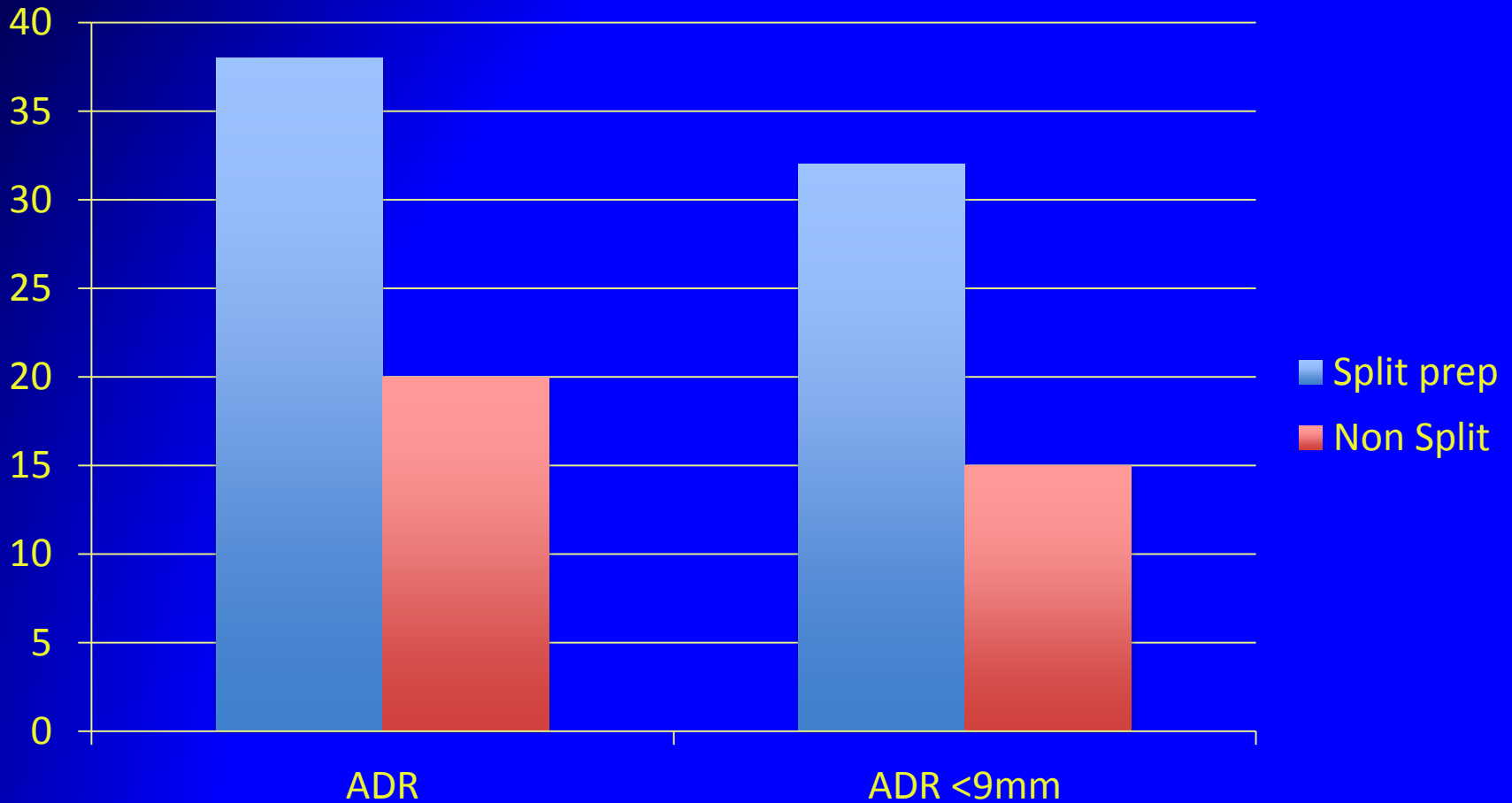
Johnson, DA, et al: Optimizing Bowel Colon Cleansing US MSTF on CRC Gastroenterol; 2014; 147: 903-924

Split Prep Is Superior to Other Preps



- Meta-analysis
- 9 Trials
- Split dose is superior for excellent prep OR 3.46

Split Prep = Higher ADR



Adjuncts to Colon Cleansing Before Colonoscopy

Not recommended:

- simethicone
- flavored electrolyte solutions (eg, Gatorade)
- prokinetics
- spasmolytics
- bisacodyl
- senna
- olive oil
- probiotics

Helpful:

- Crystal Lyte flavoring
- Warm chicken broth
- Lots of clear liquids

For those with constipation:

- Miralax daily for a period depending on their stool burden
- Prolonged regimens
- Low residue diet ranging from 3 days to 3 weeks

Patient Education & Navigators

Optimizing Preparation Results

Recommendations

1. Health care professionals should provide both oral and written patient education instructions for all components of the colonoscopy preparation and emphasize the importance of compliance (*Strong recommendation, moderate-quality evidence*)
2. The physician performing the colonoscopy should ensure that appropriate support and process measures are in place for patients to achieve adequate colonoscopy preparation quality (*Strong recommendation, low-quality evidence*)

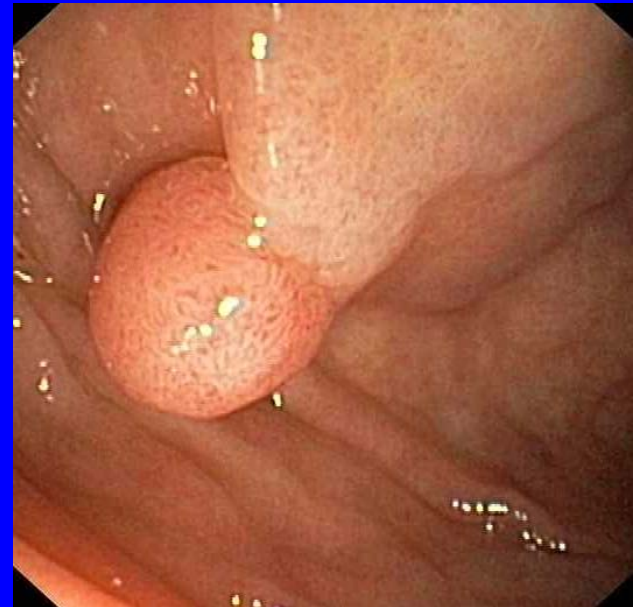
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Pre- Procedure Other Things

- Time booked for procedure
 - Fatiguing – am vs pm or many in a row likely not significant
 - Although 'N' may have to be higher
 - Duration of procedures
 - How low can you go....
 - Running two rooms, dictating or report in between cases?
 - Talking to family in between cases?
 - For most 30 minutes is going to be it for FIT positive
 - Do you usually start late?



Procedure Related Strategies to Improve ADR

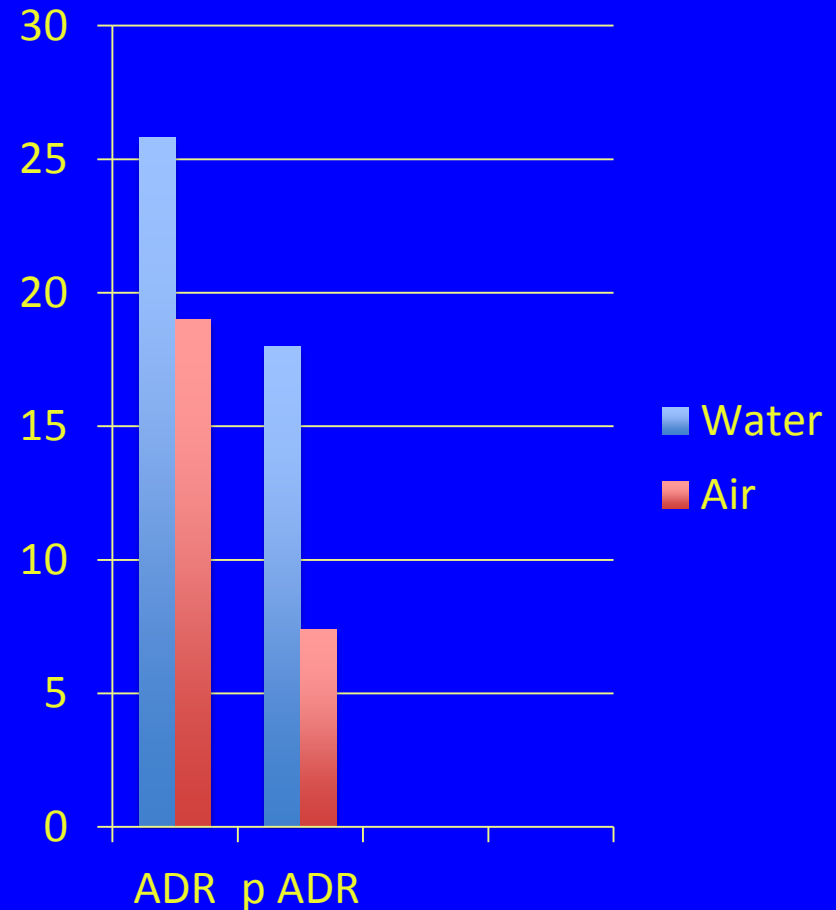


Technologies and Techniques to Improve Quality

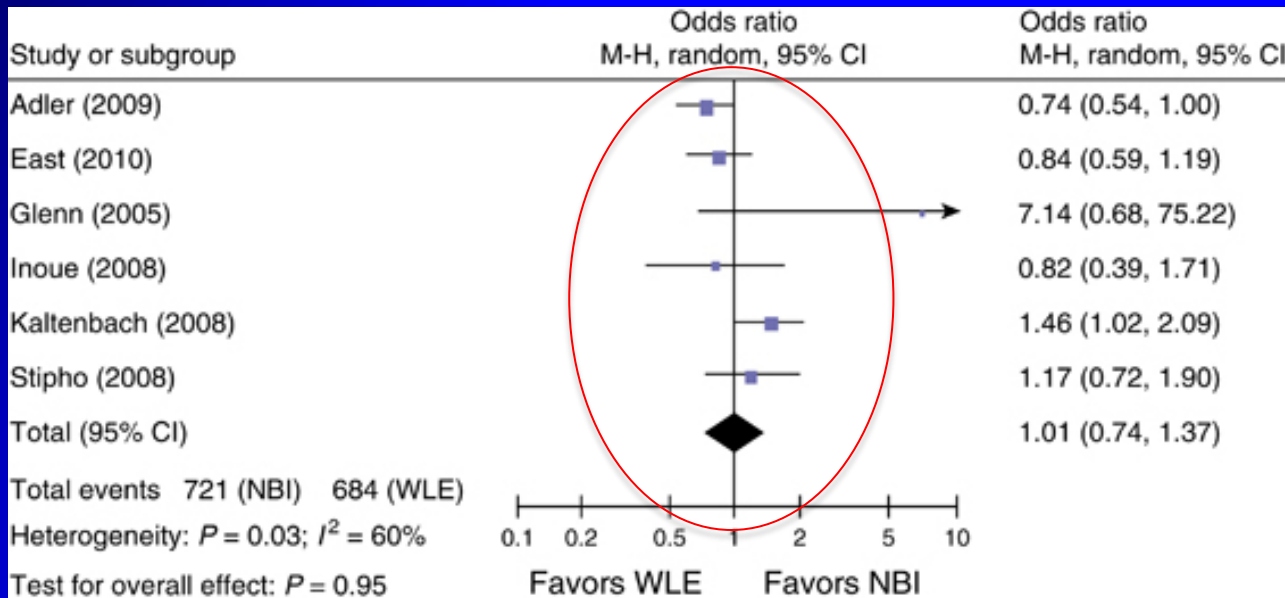
- Water Immersion Technique
- High Definition Endoscopes
- Cap Assisted Colonoscopy
- Retrograde Viewing Device
- Full spectrum endoscopy (Fuse)

Water-aided Colonoscopy

- Primary end point
 - Improved pain score
 - No change in cecal intubation
 - Less sedation administered
- Secondary end point
 - Significant improvement overall ADR and proximal ADR with $P = <0.05$

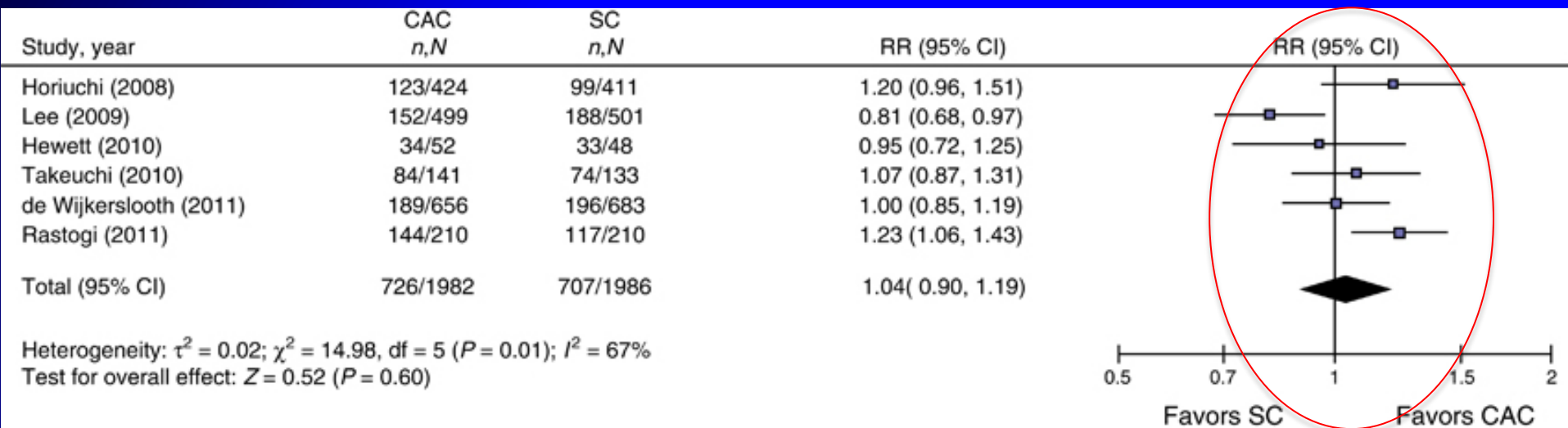


HD Scopes: NBI vs. White Light

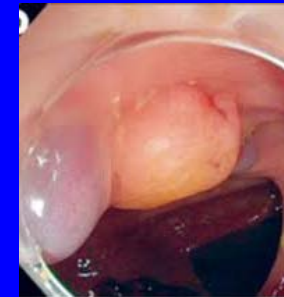


- No significant difference between NBI and WL

Cap Assisted Colonoscopy vs. Standard Colonoscopy

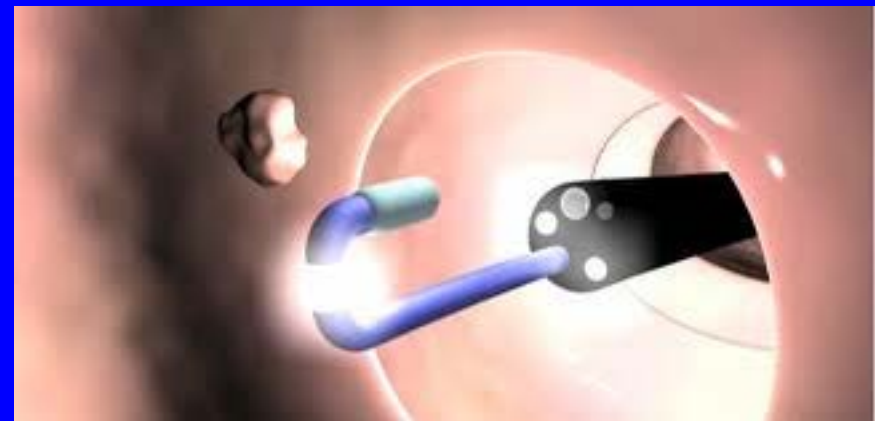


- Meta analysis
- 16 RCT N = 8,991
- RR 1.04 CI 0.90-1.19

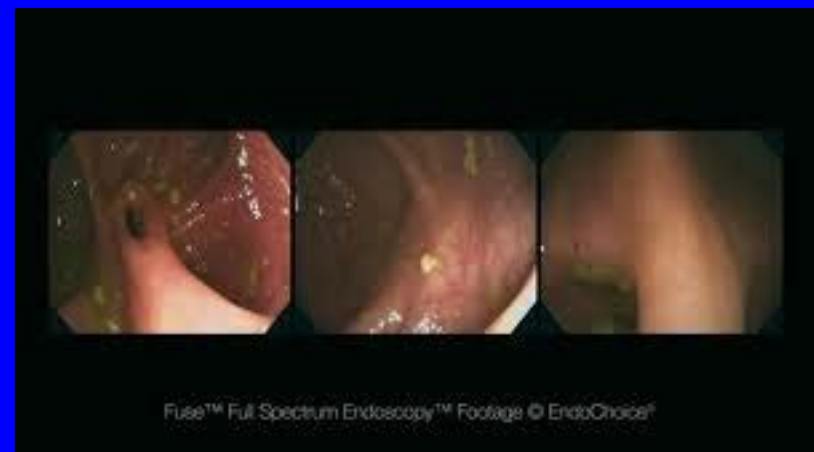


Third Eye Retrograde Viewing Device

- Group A
 - SC then TER
 - 35.2 % increased ADR
- Group B
 - TER then SC
 - 30.8 %
 - Net additional detection with TER 4.4%



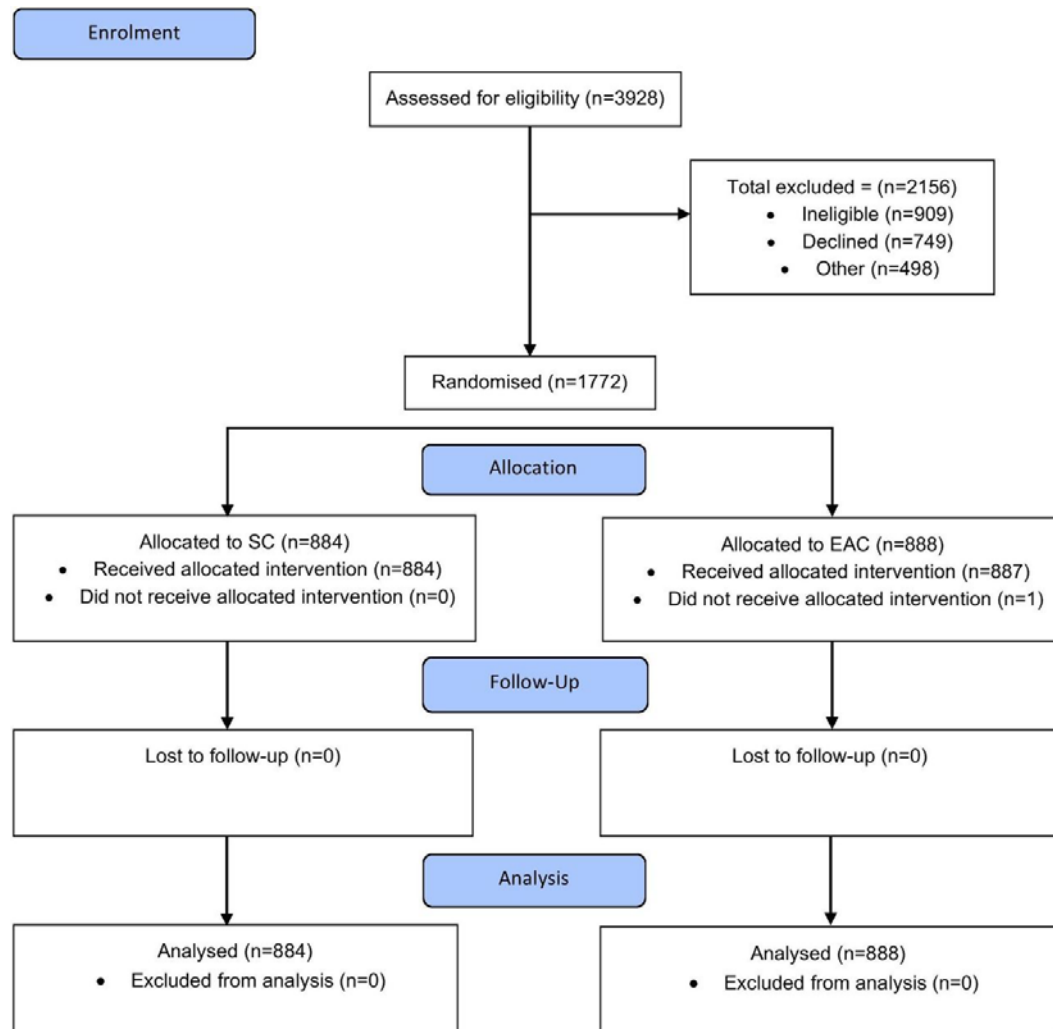
Full Spectrum Endoscopy



Fuse™ Full Spectrum Endoscopy™ Footage © EndoChoice®



Trial profile. EAC, EV-assisted colonoscopy; SC, standard colonoscopy.



Wee Sing Ngu et al. Gut doi:10.1136/gutjnl-2017-314889

Results

- 1772 patients (57% male, mean 62 yrs) recruited over 16 months with 45% screening.
- EAC increased ADR globally from 36.2% to 40.9% (P=0.02).
 - The increase was driven by a 10.8% increase in FOBt-positive screening patients (50.9% SC vs 61.7%, P<0.001).
 - EV patients had higher detection of mean adenomas per procedure, sessile serrated polyps, left-sided, diminutive, small adenomas and cancers (cancer 4.1% vs 2.3%, P=0.02).
- There were no significant EV adverse events.

Positioning

- Several studies showing positioning help
- Presently, we teach that 'turning' exposes more surface area and moves more fluid in an advantageous fashion
- If you turn and expose new surface; maybe you don't need all these instruments?

Increasing ADR in Right side of colon- comparing retroflexion and repeat forward viewing

- Desai et al GIE 2018
- Meta analysis showing both effective

Albert Einstein

- “Definition of insanity is repeating the same thing over and over expecting a different result”
 - Unlikely- Einstein was extremely savvy and would never have characterized ‘insanity’ in such restrictive terms
- Mark Twain
- Old Chinese saying
- Benjamin Franklin
- AA back to 1930s

Computer Assisted

- 'Artificial intelligence'
 - Reading the bowel
 - Can only read what it can see.....

Summary

- Quality over quantity
- New technology is marginally better when compared to standard white light
- Good mucosal inspection is the key
- Can expose bowel in various ways however, an attentive endoscopist is the key