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Abstract Discussion Forum **(0)**

Number: Tu2006

ROLE OF ENDOSCOPIST ON PERFORMANCE OF ARTIFICIAL INTELLIGENCE IN NEOPLASIA DETECTION DURING COLONOSCOPY: METAANALYSIS AND METAREGRESSION OF ENDOSCOPIST LEVEL DATA FROM 25 STUDIES

Society: ASGE

Track: Technologies and Procedural Innovation

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Background:

Benefits of Artificial Intelligence in neoplasia detection across endoscopists with varying baseline performance is unclear. We aimed to assess how baseline adenoma detection rates influence the benefits of AI in colonoscopy.

Methods:

PubMed, Embase, and Cochrane were searched until May 30, 2024, to identify RCTs for AI-assisted colonoscopy (CADe) vs. standard colonoscopy (SC). Authors from eligible studies provided endoscopist-level data on baseline ADR and following outcomes: 1) Adenoma and SSL detection rate (ADR and SSLDR); 2) Adenomas and Non-neoplastic lesions per colonoscopy (APC and NNLPC); and 3) Inspection time (IT) for following indications: 1) All; 2) Screening, surveillance, and diagnostic. Endoscopists performing â‰¥10 colonoscopies per arm were included and grouped into quartiles by baseline ADR: Very low (<25%), Low (25-35%), Adequate (35-45%), High (45-55%), and Very high (>55%) and each analysed as a separate study. Pooled proportions were calculated using OpenMeta[analyst]. Random effects pairwise meta-analysis was performed via RevMan using risk ratios (RR) for ADR and SSLDR, and mean difference (MD) for APC, NNLPC, and IT with 95% CI. Meta-regression was performed using random-effects model in OpenMeta[analyst] and R to assess the effect of baseline ADR on RR or MD. Residual heterogeneity was assessed with QE tests, and regression coefficient (Î²) with 95% CI was reported.

Results:

A total of 30 studies were identified, with 25 providing endoscopist-level data for 256 endoscopists (256 for ADR, 182 for SSLDR, 193 for APC, 110 for NNLPC, 174 for IT). CADe significantly increased ADR (RR 1.12 [1.08, 1.15]), SSLDR (RR 1.15 [1.02, 1.29]), APC (MD 0.18 [0.14, 0.23]), NNLPC (MD 0.04 [0.00, 0.07], p=0.04), and IT (MD 0.56 [0.33, 0.78]) vs. SC for all indications. Results were consistent for screening/surveillance/diagnostic colonoscopies. Endoscopists across baseline ADR quartiles showed ADR improvement with CADe, though the gain decreased going from very low to high quartiles. Endoscopists in the very high quartile had no ADR difference between arms. Similar results were obtained for APC as well with no benefit of CADe in very high quartile endoscopist. A meta-regression found that each 1% increase in baseline ADR decreased RR for ADR (Î² = -0.006) and MD for APC (Î² = -0.004) i.e., RR decreases by 0.06 and MD decreases by 0.04 for every 10% increase in baseline ADR. Detailed results for all outcomes are shown in Tables 1 and 2. There was low heterogeneity for all outcomes (I2 < 40%), and QE-tests showed no significant variation (QE > 0.05).

Conclusion:

Based on an individual endoscopist-level data our meta-analysis of over 250 endoscopists shows that AI improves ADR and APC in all groups, with the greatest benefits seen in those with baseline ADRs <45%.

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Jay Chudasama

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