

Study Summary

Narrow-Band Imaging for Detection of Neoplasia at Colonoscopy

A Meta-analysis of Data from Individual Patients in Randomized Controlled Trials

Gastroenterology. 2019 Aug;157(2):462-471. doi: 10.1053/j.gastro.2019.04.014. Atkinson NSS, Ket S, Bassett P, et al.

Conclusion

In a meta-analysis of data from individual patients in randomized controlled trials, we found NBI™ technology to have a higher Adenoma Detection Rate (ADR) than White Light Endoscopy (WLE), and that this effect is greater when bowel preparation is optimal.

Objective

To conduct a meta-analysis of data from individual patients in RCTs that compared NBI technology with WLE for the detection of colonic polyps, with a primary aim to stratify for bowel preparation quality.

Design

Systematic Reviews and Meta-Analyses of RCTs (Evidence level 1*, according to Oxford Center Evidence based Medicine)

Primary Outcome

ADR (adenoma detection rate: proportion of patients with at least 1 adenoma) and the ADR stratified by quality of the bowel preparation on a binary scale of best vs adequate for white light vs NBI technology.

Participant Characteristics

- A total of 4491 participants were included from RCTs using 1st generation NBI technology (EVIS LUCERA SPECTRUM™ Endoscopy System or EXERA II™ Endoscopy System) or 2nd generation NBI technology (EVIS LUCERA ELITE™ Endoscopy System or EXERA™ III Endoscopy System) for the detection of colonic polyps
- Median ± SD age of the participants was 63 ± 10 years (range, 18–89 years) and 62% were male
- Twenty-nine percent of participants had “best” bowel preparation
- Indications included both screening and non-screening
- The endoscopists who performed the colonoscopy belong to an academic center

* Study design considered most reliable.

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Results

- For the primary outcome measure of ADR, 1011 of 2239 (45%) participants randomized to NBI technology had adenomas compared with 952 of 2251 (42%) participants randomized to WLE (unadjusted OR, 1.14; 95% CI, 1.01–1.29; P = 0.04**) (Figure 1)
- Comparing the ADR in the NBI technology group with the white-light group adjusted for quality of bowel preparation, no significant difference was observed in the adequate bowel preparation group (OR, 1.07; 95% CI, 0.92–1.24; P = 0.38). However, the odds of detecting at least 1 adenoma in the “best” bowel preparation group was significantly higher with NBI technology compared to WLE (OR, 1.30; 95% CI, 1.04–1.62; P = 0.02**). (Figure 1)
- The odds of detecting at least 1 adenoma with second-generation bright NBI technology vs white light was significantly higher than with WLE (OR, 1.28; 95% CI, 1.05–1.56; P =0.02); however, this effect was not observed for first-generation NBI technology (OR, 1.06;95% CI, 0.91–1.24; P=0.48). (Figure 2)

Figure 1

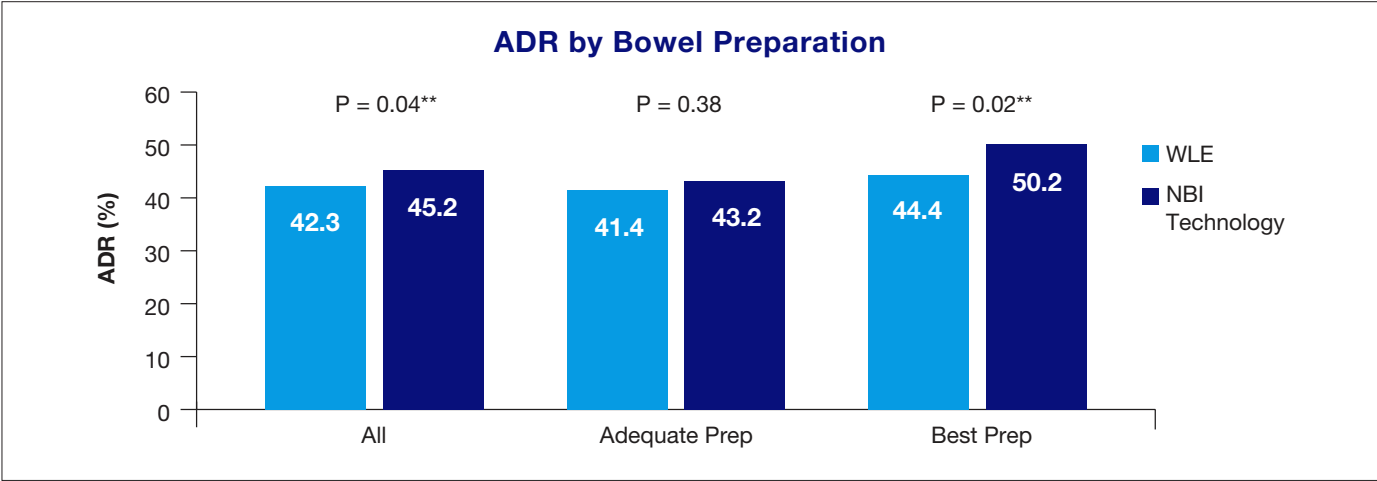
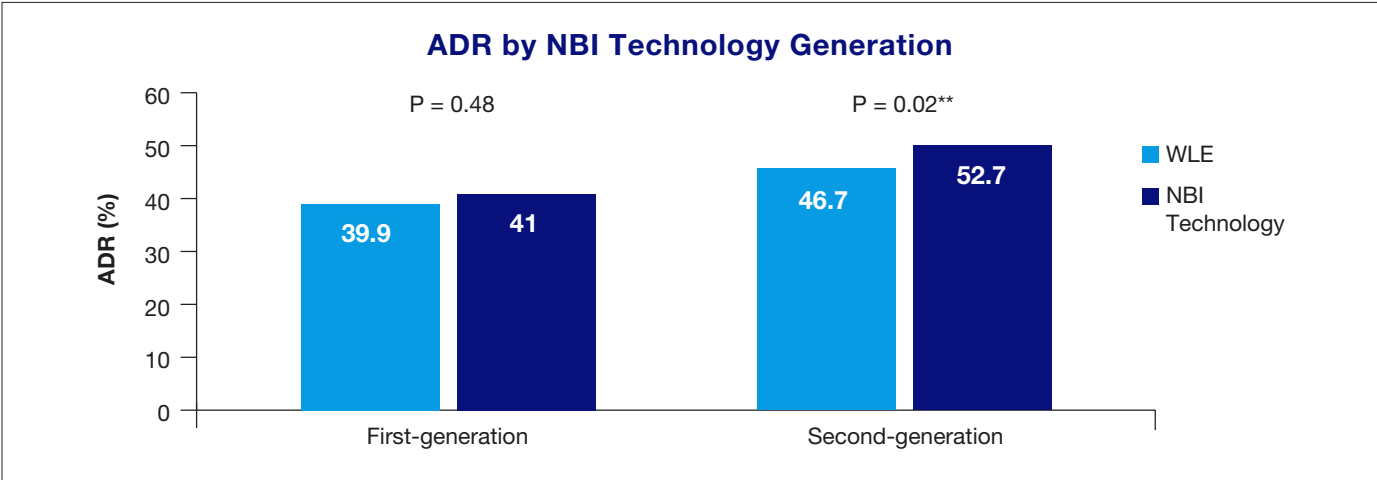


Figure 2



** A p-value less than 0.05 (typically ≤ 0.05) is statistically significant.

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Notes

- This is the first meta-analysis that utilized individual patient-level data from RCTs comparing first- and second-generation high-definition NBI technology with high-definition WLE. Also, this is the first compilation of second-generation NBI technology study data.
- The authors demonstrated a small improvement in adenoma detection overall, which was more pronounced when bowel preparation was “best”. Second-generation “Bright” NBI technology performed better than first-generation NBI technology.
- Bowel preparation terms and classifications varied between studies. These heterogeneous bowel preparation scores were dichotomized by identifying the cleanest bowel preparation category for each study, which was termed best, and grouping all other categories as “adequate” bowel preparation.

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