

Introduction

Upper gastrointestinal bleeding (UGIB) usually requires esophagogastroduodenoscopy (EGD) for diagnostic and – potentially – therapeutic purposes. However, blood within the gastric lumen may hinder the procedure. Administration of prokinetics like erythromycin has shown efficacy in addition to modalities like nasogastric (NG) lavage.

The 2021 ACG guidelines suggested an infusion of erythromycin before endoscopy in patients with UGIB. However, this was only a conditional recommendation based on very low-quality evidence¹.

This network meta-analysis investigates the efficacy of these interventions prior to EGD.

Methods and Materials

We conducted a comprehensive search of PubMed/Medline, EMBASE, Web of Science Core Collection, and Cochrane Register of Controlled Trials through March 8, 2022.

We used the following inclusion parameters:

- 1) Patients – Undergoing EGD for UGIB;
- 2) Intervention – Prokinetics (erythromycin, metoclopramide), NG lavage, or the combination;
- 3) Control – Placebo or no intervention;
- 4) Outcomes – Empty stomach / adequate visualization and need for second look endoscopy, duration of endoscopy, mean packed red blood cell (PRBC) transfusion, and overall mortality.

The random effects model and DerSimonian-Laird approach was used as a priori to pool and compare outcomes given the presumed heterogeneity in studies.

Through binary outcomes, mean difference (MD), risk ratios (RR) with 95% confidence interval (CI) and p values were reported.

Results

A total of eight RCTs with 721 patients were included²⁻⁹. The mean age of included patients was 60.0± 3.1 years and 73.2% were male (Table 1).

The combination of NG lavage with erythromycin showed lower mortality than placebo, although the difference was not statistically significant (RR: 0.20, CI: 0.04 – 1.08, p = 0.06) (Fig. 1a).

The mean duration of endoscopy did not differ between interventions and placebo: erythromycin (MD: -2.73, CI: -11.96 – 6.51, p = 0.56), NG lavage (MD: 0.47, CI: -13.56 – 14.49, p = 0.95), and NG lavage with erythromycin (MD: -2.19, CI: -16.26 – 11.87, p = 0.76) (Fig. 1b).

The mean PRBC transfusion did not differ between erythromycin and placebo (MD: -0.46, CI: -1.71 – 0.78, p = 0.47) (Fig. 1c).

Table 1. Baseline demographics and study details (E: Erythromycin, N: No. of patients, NG: Nasogastric tube, NR: Not reported, P: Placebo, SD: Standard deviation).

Study, Year	No. of Patients	Mean age, years (SD)	Male patients, N
Altraif, 2010	E: 53 P: 49	E: 62.3 (9.8) P: 62.7 (14.7)	E: 32 P: 31
Ardakani, 2013	NG lavage: 20 NG lavage+ E: 20	NG lavage: 62 (17) NG lavage+ E: 61 (15)	NG lavage: 11 NG lavage+ E: 11
Carbonell, 2006	NG lavage: 50 NG lavage + E: 50	NG lavage: 57 (13.4) NG lavage+ E: 59.3 (14.6)	NG lavage: 38 NG lavage+ E: 40
Coffin, 2002	NG lavage: 22 NG lavage + E: 19	NG lavage: 58 (20) NG lavage+ E: 56 (19)	NG lavage: 14 NG lavage+ E: 11
Frossard, 2002	E: 51 P: 54	E: 59.2 (15) P: 64.5 (16)	E: 39 P: 45
Na, 2017	NG lavage: 15 NG lavage + E: 14 E: 14	NG lavage: 63 (12) NG lavage+ E: 57 (15) E: 60 (14)	NG lavage: 13 NG lavage+ E: 13 E: 12
Pateron, 2011	NG lavage: 85 NG lavage + E: 84 E: 84	NG lavage: 61 (15) NG lavage+ E: 60 (17) E: 61 (14)	NG lavage: 62 NG lavage+ E: 61 E: 58
Shah, 2020	E: 30 P: 30	E: 53.13 (17.7) P: 54.23 (15.8)	E: NR P: NR

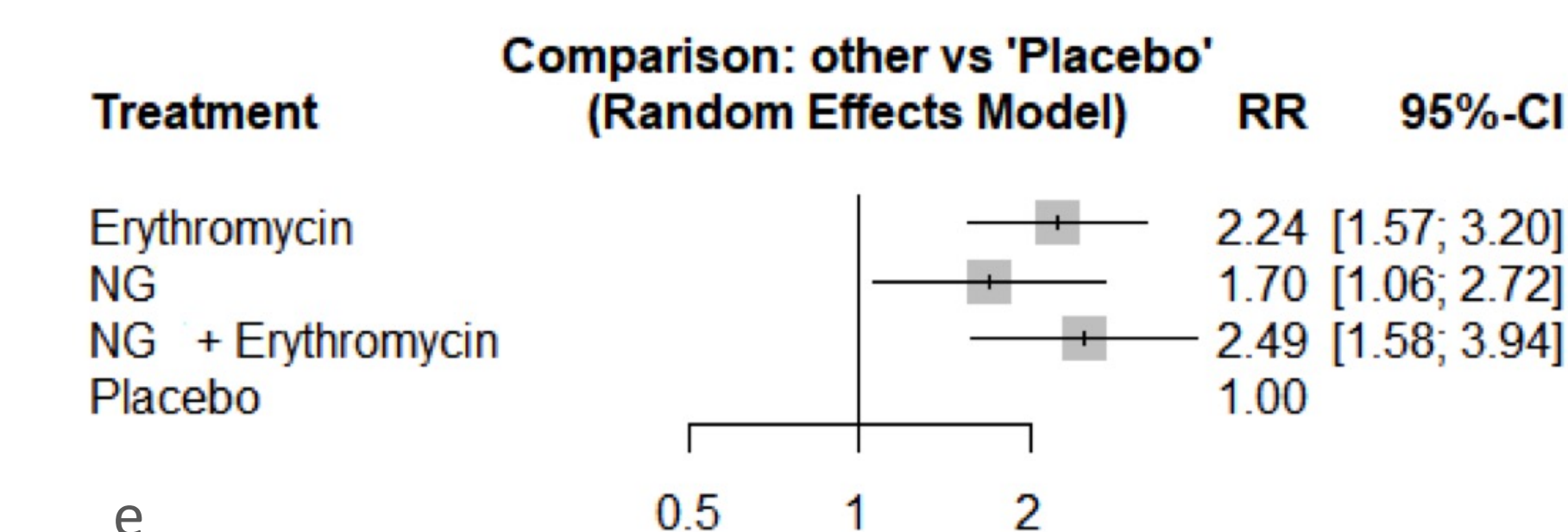
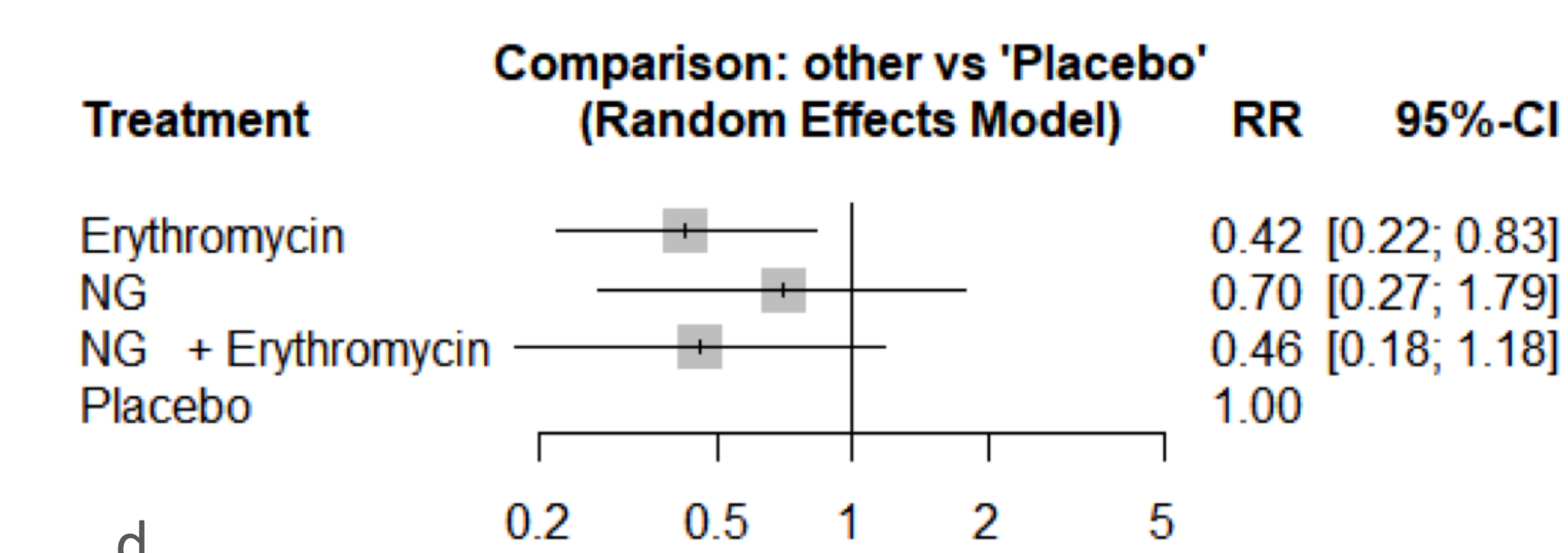
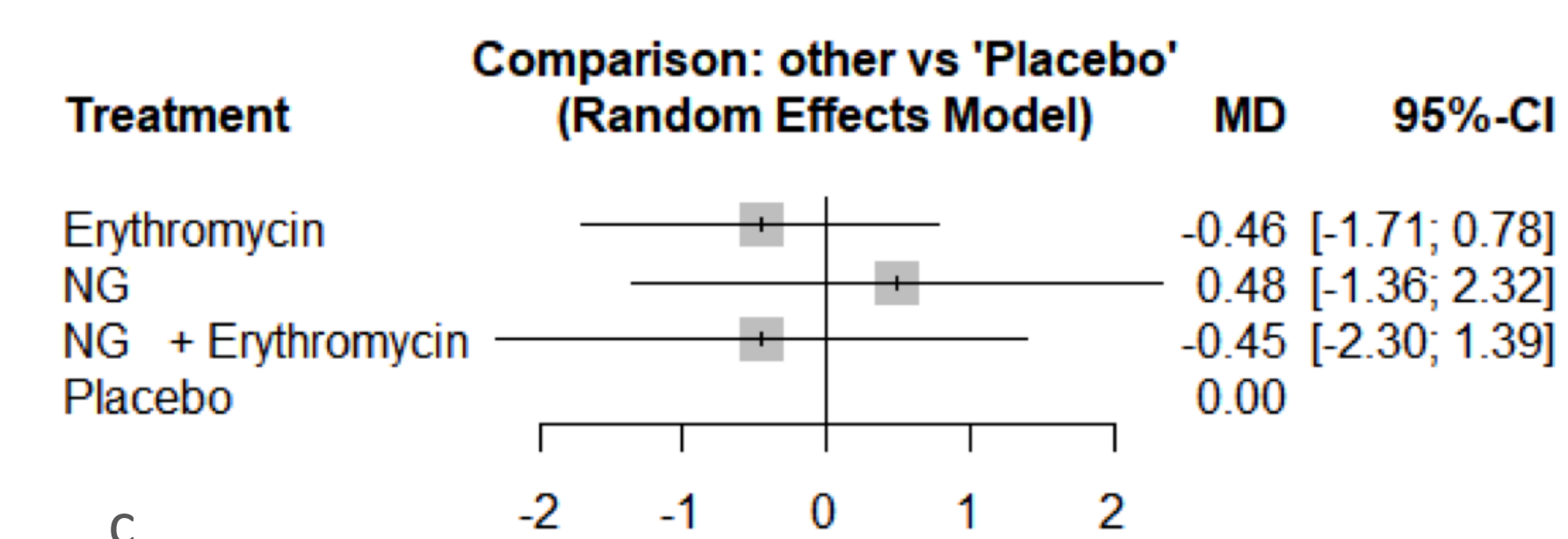
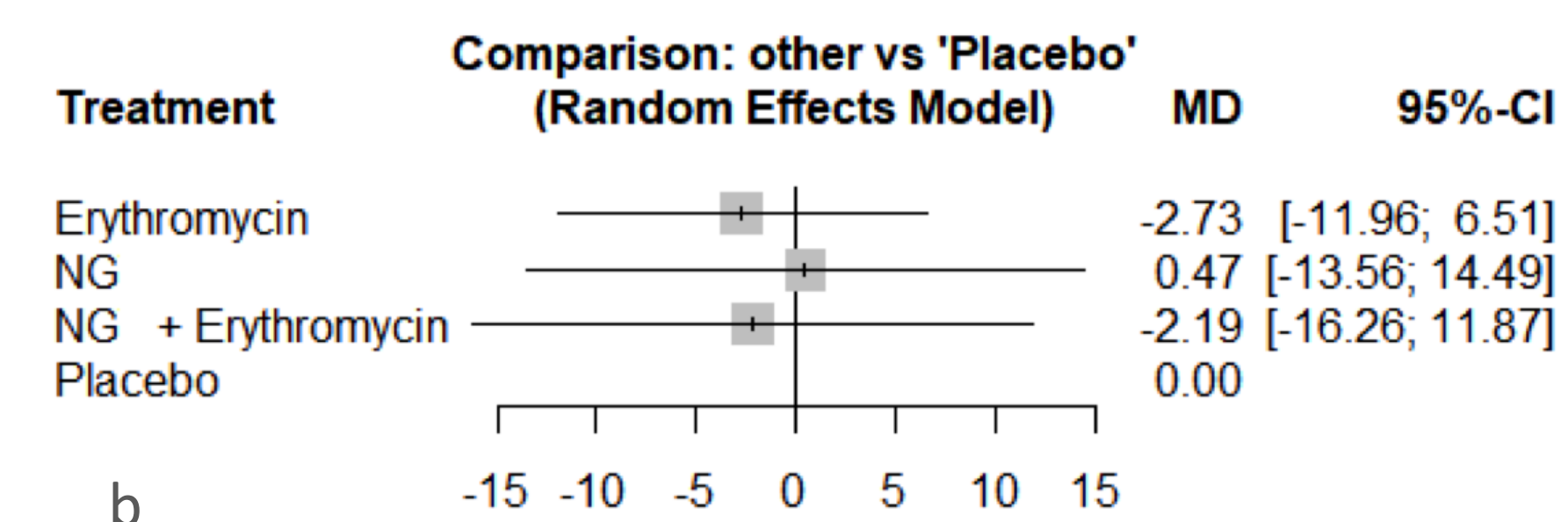
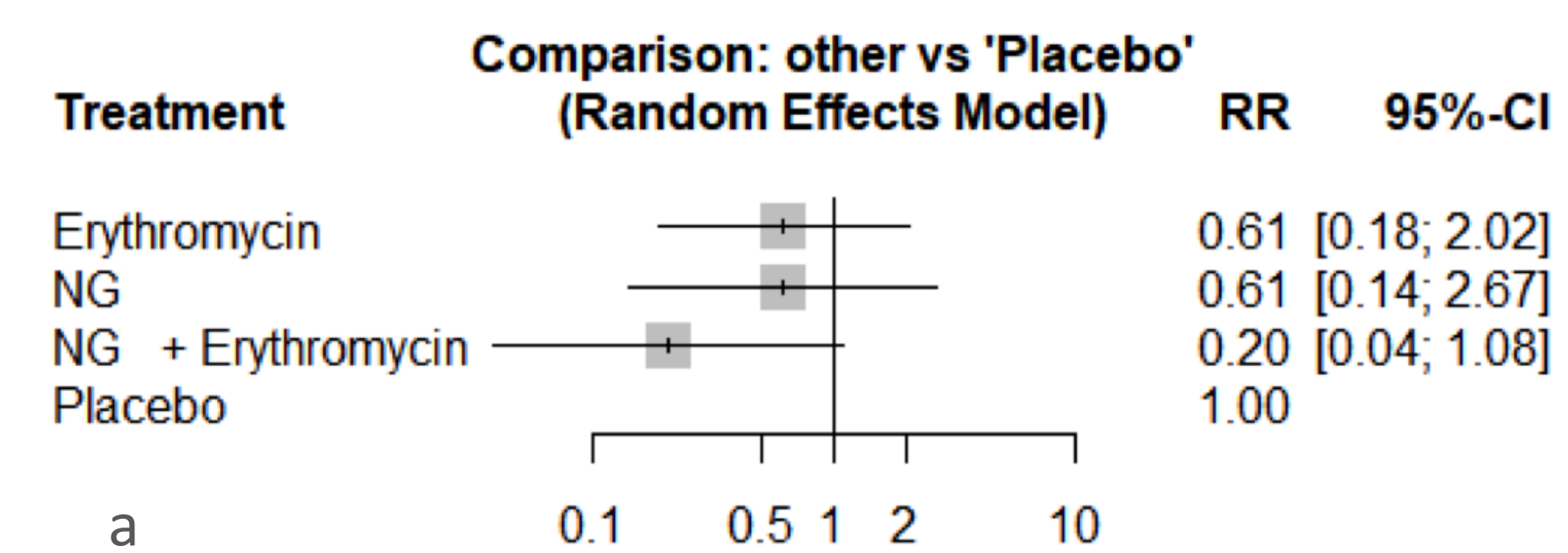


Figure 1. Forest plot illustrating (A) overall mortality, (B) mean duration of endoscopy, (C) mean PRBC transfusion, (D) the need for second look endoscopy, and (E) length of hospital stay using network meta-analysis (CI: Confidence interval, NG: Nasogastric lavage, PRBC: packed red blood cell, RR: Relative risk)

The need for second look endoscopy was significantly lower with erythromycin than placebo (RR: 0.42, CI: 0.22 – 0.83, p = 0.01, I² = 0%) (Fig. 1d).

The length of hospital stay was significantly lower for erythromycin than placebo (MD: -1.14, CI: -2.28 – -0.01, p = 0.049, I² = 38.8%) (Fig. 1e).

Using the frequentist approach, the combination of NG lavage and erythromycin (92.2) was rated highest, followed by erythromycin alone (73.1) for higher rates of empty stomach (Chart 1).

Erythromycin was rated highest for lower need for PRBC transfusion (72.8) as well as mean endoscopy duration (66.0) (Chart 1).

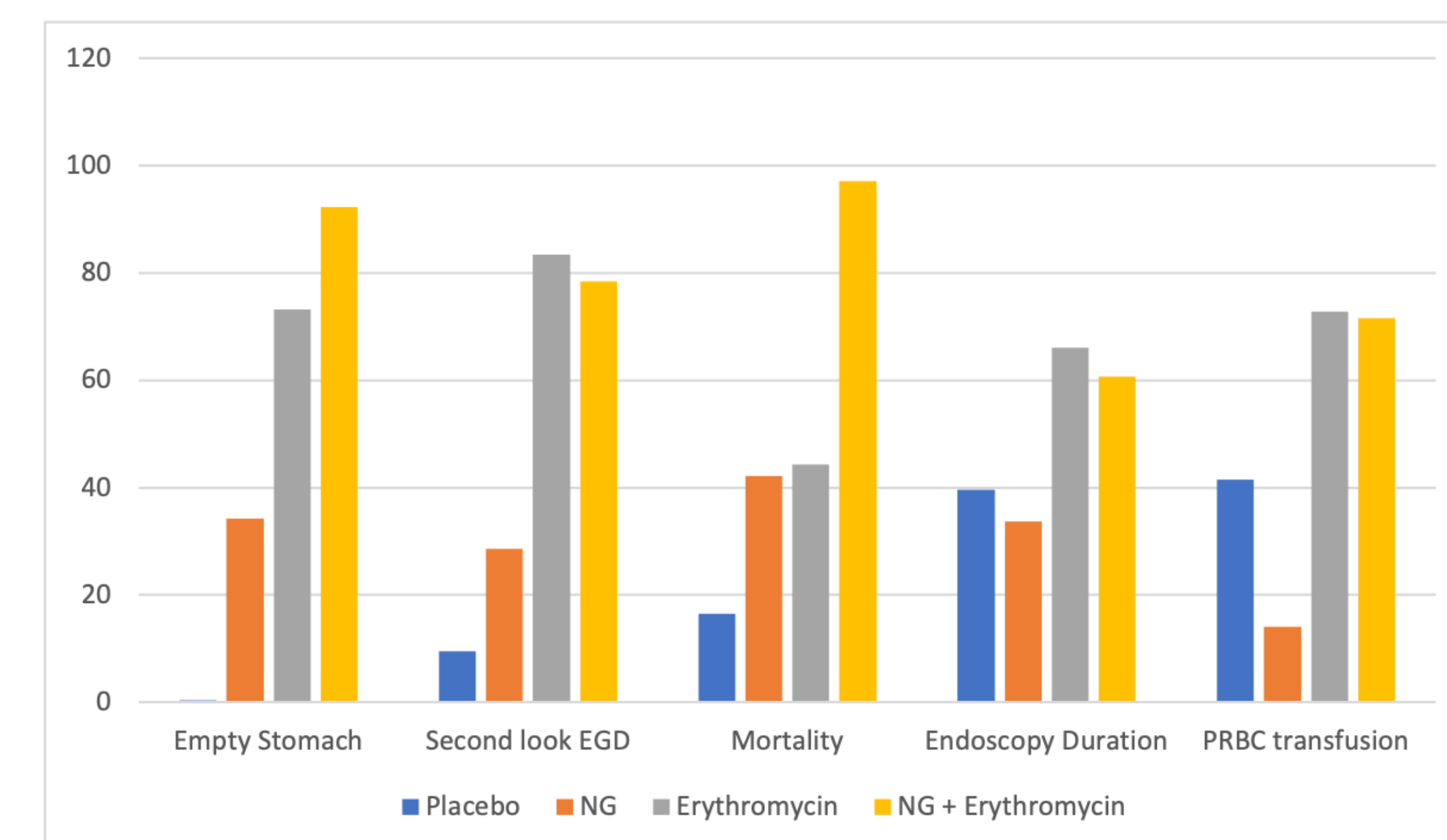


Chart 1. Ranking using frequentist approach and graded using P-score 1-100. (EGD: Esophagogastroduodenoscopy, NG: Nasogastric lavage, PRBC: Packed red blood cell)

Conclusions

In conclusion, our study suggests that erythromycin prior to EGD in patients with UGIB improves better visualization and reduced need for PRBC transfusion and repeat EGD, and reduced length of hospitalization.

We recommend future RCTs evaluate other interventions like Metoclopramide in combination with NG lavage and/ or erythromycin in patients with UGIB.

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References

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