

Supplement Table 20. Summary of studies evaluating gastric residual volume-based monitoring, aspiration risk assessment, and non-feeding route-based preventive strategies in critically ill adult patients receiving enteral nutrition (KQ8)

Study (year)	Design	Participants	Comparison	Summary
Assessing the risk of aspiration				
Sun, 2020 [87]	Case control study	Patients receiving nasogastric feeding	Aspiration prediction model development	Developed aspiration risk prediction model.
Bourgault, 2025 [88]	Observational secondary analysis	Critically ill patients receiving enteral nutrition	Aspiration prediction model development	Developed and validated aspiration prediction models.
Non–route-based preventive strategies				
Heyland, 2019 [PROMOTE trial] [97]	Multicenter RCTs	120 critically ill patients with feeding intolerance	Ulimorelin group (n=62) vs. Metoclopramide group (n=58)	Ulimorelin group: Positive tracheal aspirate over the 5 days of treatment (33.9% vs. 31.0%), Incidence of ICU-acquired pneumonia (17.7% vs. 19.0%) %DPPs (percentage daily protein prescription) over 5 days of treatment (median [Q1, Q3]) (82.9% [38.4%, 100.2%] vs. 82.3% [65.6%, 100.2%], P=0.49), Five-day rates of feeding success (67.7% vs. 70.6%, p>0.05)
Elmokadem, 2021 [98]	RCT	76 critically ill patients receiving enteral nutrition	Itopride group (n=38) vs. Metoclopramide group (n=38)	No infectious complications were reported in both groups. Itopride group: Percent of change in GRV% between day 1 and day 7 (75.7±18.8 vs. 57.3±18.9, P=0.001), Increase in the ratios of received enteral nutrition feed volume, calories, and protein after the one-week therapy (P=0.001, P=0.002, and P=0.01, respectively)
Rahat-Dahmardeh, 2021 [99]	RCT	200 critically ill patients requiring mechanical ventilation and receiving enteral nutrition	Neostigmine group (n=100) vs. Metoclopramide group (n=100)	Neostigmine group: Incidence of VAP (2% vs. 3%, P=0.651) Improvement of GRV (OR 2.45, 95% CI 1.60–3.76, P<0.001)
Lewis, 2016 [100]	Systematic review and meta-analysis	Multiple RCTs	Prokinetics group vs. Control group.	Prokinetics group: Pneumonia (RR 1.00, 95% CI 0.76–1.32, P=0.57, I ² =0%) Feeding intolerance (RR 0.73, 95% CI 0.55–0.97, P=0.03, I ² =0%)

Nassaji, 2010 [101]	RCT	220 critically ill patients receiving enteral nutrition	Prokinetics group (n=68) vs. Control group (n=152)	Pneumonia (33.8% vs. 33.6%, P=0.969)
Pozuelo-Carrascosa, 2022 [102]	Systematic review and meta-analysis	Multiple RCTs	Supine position vs. Semi-recumbent position vs. Lateral position vs. Prone position	Semi-recumbent position compared with the supine position: Incidence of VAP (RR 0.38, 95% CI 0.25–0.52)
Lian, 2024 [103]	Systematic review and meta-analysis	Multiple RCTs	Head-of-bed elevation 45° vs. Head-of-bed elevation 30	Head-of-bed elevation 45°: Incidence of VAP (OR 0.51, 95% CI 0.31–0.84, P<0.05, I ² =0%)
Zhao, 2020 [104]	Systematic review and meta-analysis	Multiple RCTs	Chlorhexidine vs. placebo/usual care:	Chlorhexidine: Incidence of VAP (RR 0.67, 95% CI 0.47–0.97, P=0.05, I ² =72%)

ICU, intensive care unit; GRV, gastric residual volume; VAP, ventilator-associated pneumonia; OR, odds ratio; CI, confidence interval; RR, risk ratio; RCTs, randomized controlled trials.

