5.3d Strategies to Optimize the Delivery of EN: Discarding Gastric Residual Volumes

There have been no new randomized controlled trials since the 2015 update and hence there are no changes to the following summary of evidence.

Question: Does the use of returning or discarding high gastric residual volumes (GRVs) result in better outcomes in the critically ill adult patient?

Summary of evidence: There was one level 2 study that compared the return of gastric residual volume up to a maximum of 250 mls vs. discarding the residuals.

Mortality: Not reported.

Infections: Not reported.

LOS: There were no differences in ICU length of stay between the groups (WMD -0.70, 95% CI -3.61, 2.21, p=0.64*. Ventilator days were not reported.

Ventilator days: Not reported.

Other: There were no differences in diarrhea (p=0.71), abdominal distention (p=0.07), or patients with hyperglycemia (p=0.55), while the episodes of delayed gastric emptying were significantly lower in the GRV return group (p=0.001).

Conclusions:

1) Re-feeding GRVs is not associated with more gastric complications when compared to discarding GRVs.

Level 1 study: *if all of the following are fulfilled: concealed randomization, blinded outcome adjudication and an intention to treat analysis.*
Level 2 study*: If any one of the above characteristics are unfulfilled.*

Table 1. Randomized studies evaluating returning or discarding high gastric residual volumes in critically ill patients

Study	Population	Methods (score)	Intervention	Mortality # (%)†		Infections # (%)‡	
1) Juve-Udina 2009	ICU patients fed via EN or PN N=125	C.Random: no ITT: No Blinding: No (5)	GRV>250 mL discard excess, reefed 250mL vs. if GRV>250 mL discard entire feed	**GRV return** NR	**GRV discard** NR	**GRV return** NR	**GRV discard** NR

Table 1. Randomized studies evaluating returning or discarding high gastric residual volumes in critically ill patients (Continued)

Study	Length of Stay		Mechanical Ventilation		Other
1) Juve-Udina 2009	**GRV return** **ICU** 16 ± 8.1 (61)	**GRV discard** **ICU** 16.7 ± 8.3 (61)	**GRV return** NR	**GRV discard** NR	**GRV return** / **GRV discard** **Diarrhea** 25/61 (41) / 22/61 (36), p=0.71 **Abdominal distention** 13/61 (21) / 17/61 (29), p=0.07 **Patients with hyperglycemia** 41/61 (67) / 45/61 (73), p=0.55 **# episodes of Hyperglycemia** 1352 (62) / 1376 (53), p=0.001 **# episodes delayed gastric emptying** 2170 / 2580, p=0.001 **Mean administered of EN (ml)** 1296.3 / 1291.5, p=0.89 **Mean EN duration (days)** 8.2 ± 4.2 / 9.9 ± 1.4, p=0.28 **EN feeding delays, patient, no, (%)** 11 (26.8) / 8 (22.2), p=0.91 **EN feeding delays, episodes, mean** 1.68 / 2.26, p=0.11

C.Random: concealed randomization
† presumed hospital mortality unless otherwise specified
± ( ) : mean ± Standard deviation (number)
EN: Enteral nutrition
ITT: intent to treat; NA: not available
GRV: gastric residual volume
‡ refers to the # of patients with infections unless specified
ICU: Intensive care unit

References

Included Studies

1. Juvé-Udina ME, Valls-Miró C, Carreño-Granero A, et al. To return or to discard? Randomised trial on gastric residual volume management. Intensive Crit Care Nurs. 2009;25(5):258-267. doi:10.1016/j.iccn.2009.06.004

Excluded Studies	Reasons
Booker KJ, Niedringhaus L, Eden B, Arnold JS. Comparison of 2 methods of managing gastric residual volumes from feeding tubes. Am J Crit Care. 2000;9(5):318-324.	No clinical outcomes
Behairy AS, Elsedawy ED. Effect of returning versus discarding gastric aspirate on the occurrence of gastric complications and comfort outcomes on enteral feeding patients. J Nat Sci Res. 2014;14(15):10.	Quasi-experiment
Wang L, Chen J, Zou M.Influence of infusion of gastric fluid retention on gastric remnant and its complications in critical ICU patients. Chin Nurs Res 2017; 2:226-228	Article in Chinese; unable to access full text
Wen Z, Xie A, Peng M, Bian L, Wei L, Li M. Is discard better than return gastric residual aspirates: a systematic review and meta-analysis. BMC Gastroenterol. 2019;19(1):113. Published 2019 Jun 28. doi:10.1186/s12876-019-1028-7	Meta-analysis; studies reviewed