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Early versus late enteral feeding in critically ill children: a randomized controlled trial

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Dear Sir,
Enteral nutrition is the preferred mode of nutritional support in critically ill patients [1, 2]. There are very few randomized studies addressing the timing of enteral feeding in the paediatric intensive care unit (PICU) [3]. We conducted this open-label randomized study to compare early (6–24 h) with late (>24 h) initiation of enteral feeding in PICU. The primary outcome was duration of PICU stay.

Overall, 308 children were screened and 120 were randomized into the two study groups, 60 in the early feeding group and 60 in the late feeding group (see Electronic Supplementary Material). Random allocation was done using computer-generated random numbers and the allocation was concealed in sealed opaque envelopes in the PICU. The early feeding group had younger patients and more malnourished children in spite of random allocation (Supplementary Table 1). Nasogastric feeding was initiated after a median duration of 6 h in the early feeding group and 40 h in the late

feeding group. Caloric requirement could be reached within 24 h of starting enteral feeds in 89 % (89.4 % in early feeding and 88.4 % in late feeding) of the patients.

The duration of PICU stay was found to be similar in both groups even after adjusting for malnutrition, age and other baseline variables (Table 1; Fig. 1). There were similar results with other outcome variables (Table 1). Even though the number of feeding-related complications was higher in the early feeding group (26.32 vs 19.23 %), the difference was not statistically significant.

The benefits of early enteric feeding in critically ill adult patients are well established and recommended by various guidelines and systematic reviews [4, 5]. However, in our study on paediatric patients, we found that

the time of initiation of enteral feeding had no effect on the duration of PICU stay. A meta-analysis showed that early enteral feeding was associated with lesser incidence of pneumonia [5]. We did not observe this. The reported decrease in mortality of 20 % in adult medical ICU patients has not been replicated in any paediatric population to date [5]. In our study, the observed reduced mortality in the early feeding group was not statistically significant, possibly because the early feeding group had a higher proportion of malnourished children and infants.

Our study had some other limitations too. The volume of feeds, based on the Holliday and Segar formula, could have overestimated the calorie requirement in many patients. We used an in-house feeding mixture and

Table 1 Comparison of outcome variables

Variables	Early (n = 57)	Late (n = 52)	P value
Proportions [n (%)]			
Mortality	17 (29.8 %)	25 (48.1 %)	0.07
Incidence of VAP (per 1000 ventilated days)	72.9	68	0.44
Incidence of BSI	8 (14.0 %)	9 (17.3 %)	0.64
Incidence of feeding complications	15 (26.32 %)	10 (19.23 %)	0.45
Incidence of electrolyte imbalance	21 (36.8 %)	24 (46.2 %)	0.23
Median (IQR)			
Duration of ventilation (h)	118 (167)	120 (96.5)	0.41
Duration of PICU stay (h)	168 (190)	143 (122.5)	0.41

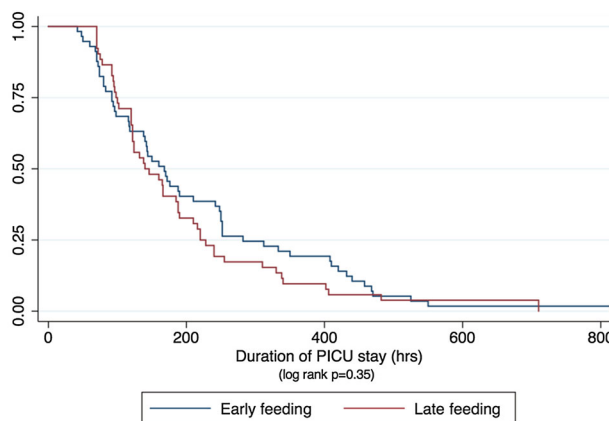


Fig. 1 Kaplan Meier curve comparing the duration of ICU stay of the study groups

the calorie and protein content was estimated on the basis of the constituents and was not actually measured.

Our study has shown that enteral feeding can be initiated as early as 24 h after admission to the PICU with no significant adverse events.

Although there was no significant effect of early enteral feeding on the duration of PICU stay, there was a tendency towards better survival in the early feeding group. Further randomized studies stratified for age and nutritional status are required to establish any potential advantage of early enteral feeding in critically ill children.

Compliance with ethical standards: Approved by institute ethics committee for human studies

Conflicts of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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