

## BACKGROUND

In 2016, 486,000 burn injuries received medical treatment.<sup>1</sup> Death rates from burn injuries have declined over the past years from the improvement of infection control, resuscitation, and better treatment for the burn patients' hypermetabolic response.<sup>2,3</sup> Mortality rate increases with >20% total body surface area burns.<sup>2</sup> The body undergoes a hypermetabolic state that can lead to organ dysfunction, infections, and mortality.<sup>3,4</sup> Due to the high risk in loss of lean body mass, early enteral nutrition (EN) within 24 hours after the injury is highly suggested.<sup>2</sup> Gastric intestinal dysmotility is a commonly seen complication in severe burn patients that occurs on average 32 hours after admission to the hospital and that is thought to complicate EN tolerance.<sup>5,6</sup> Literature has shown that burn patients with gastric intestinal dysmotility receiving post pyloric tube feedings can tolerate nutrition and meet their nutritional needs.

## PURPOSE

This observational and retrospective project will aim to answer if early EN within 24 hours decreases LOS and the time it takes to reach EN goal rate in burn care patients.

## METHODS

The patients included those who were admitted to the burn care unit at UMC during March 2021 to May 2022. Other inclusion criteria were having EN initiated, meeting the goal rate and being at least 18 years old. The exclusion criteria included those deceased during the hospital stay. A list of all patients was obtained from the department manager. Using the EMRs, data was collected for all patients who fit the inclusion and exclusion criteria. The statistical analysis was done using a one-way ANOVA test in Excel with 3 categories variables of EN being met within 24 hours, 24-48 hours, and beyond 48 hours. The ANOVA test was ran twice, once with the continuous variable of LOS and then with the days it took to reach the EN goal rate.

Table 1. Summary and ANOVA for EN initiation and Length of Stay

Summary						
Groups	Count	Sum	Average	Variance		
Group 1	25	960	38.4	1078		
Group 2	5	231	46.2	1484.7		
Group 3	2	71	35.5	924.5		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	286.57	2	143.28	0.12	0.88	3.32
Within Groups	32735.3	29	1128.80			
Total	33021.87	31				

Group 1 had EN initiated < 24 hours, Group 2 had EN initiated within 24 – 48 hours, and Group 3 had EN > 48 hours.  $p < 0.05$  is statistically significant.

Table 2. Summary and ANOVA for EN initiation and time to reach EN goal

Summary						
Groups	Count	Sum	Average	Variance		
Group 1	25	57	2.28	4.29		
Group 2	5	27	5.4	27.8		
Group 3	2	8	4	8		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	43.26	2	21.63	2.82	0.07	3.32
Within Groups	222.24	29	7.66			
Total	265.5	31				

Group 1 had EN initiated < 24 hours, Group 2 had EN initiated within 24 – 48 hours, and Group 3 had EN > 48 hours.  $p < 0.05$  is statistically significant.

### Enteral feeds in Large Burns Algorithm

**Rationale:** Enteral feeds are important in the setting of a large burn. These patients are hyper metabolic and have therefore have increased caloric requirements. Early feeding of such patients leads to improved outcomes.

**Indication:** Burns with a Total Body Surface Area (TBSA) 20% or higher. First degree burns are NOT included in this calculation

**Goal:** Place a post pyloric Dobhoff tube within 2 hours of arrival of the UMC Lions Burn Care Center

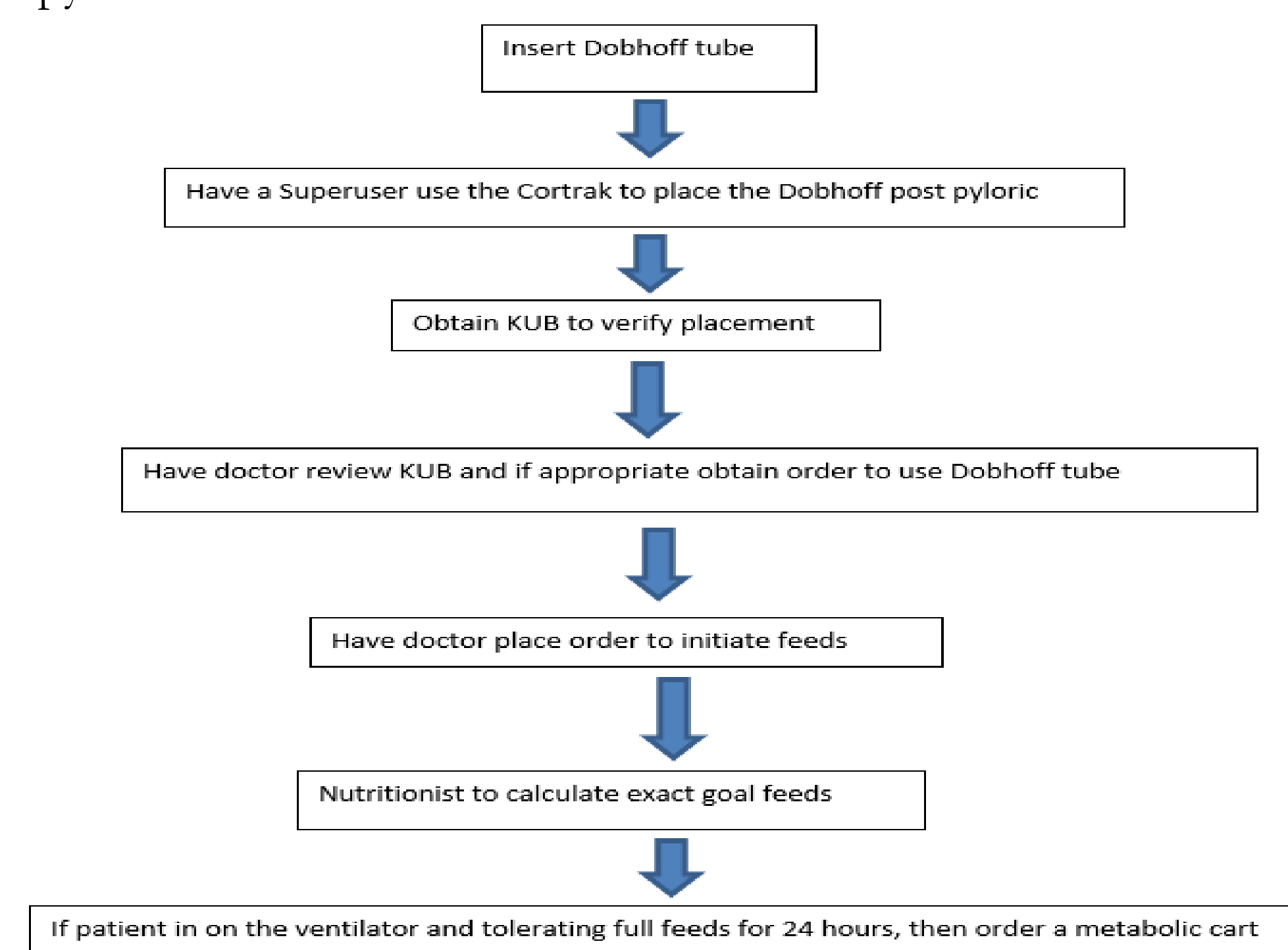
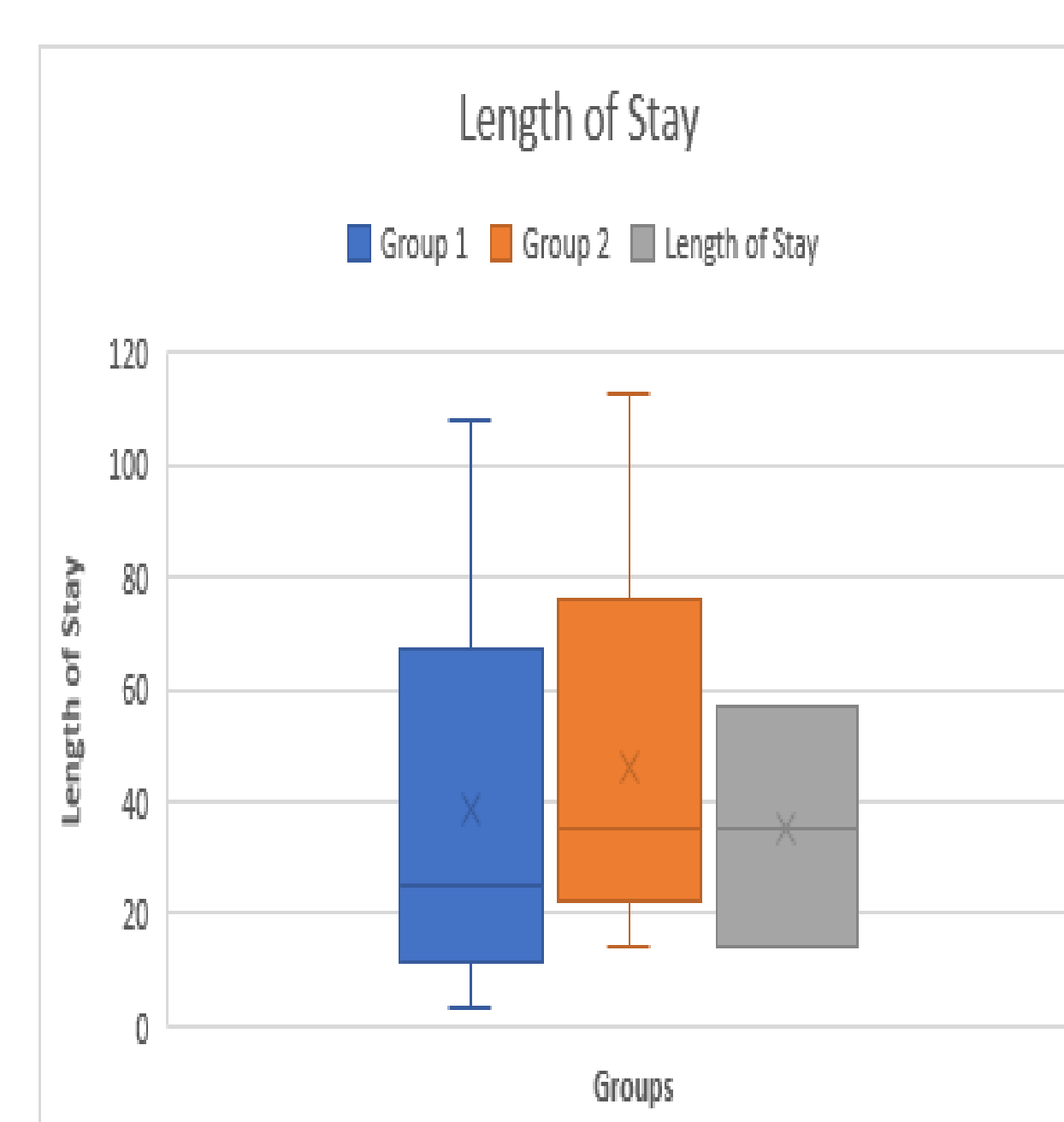
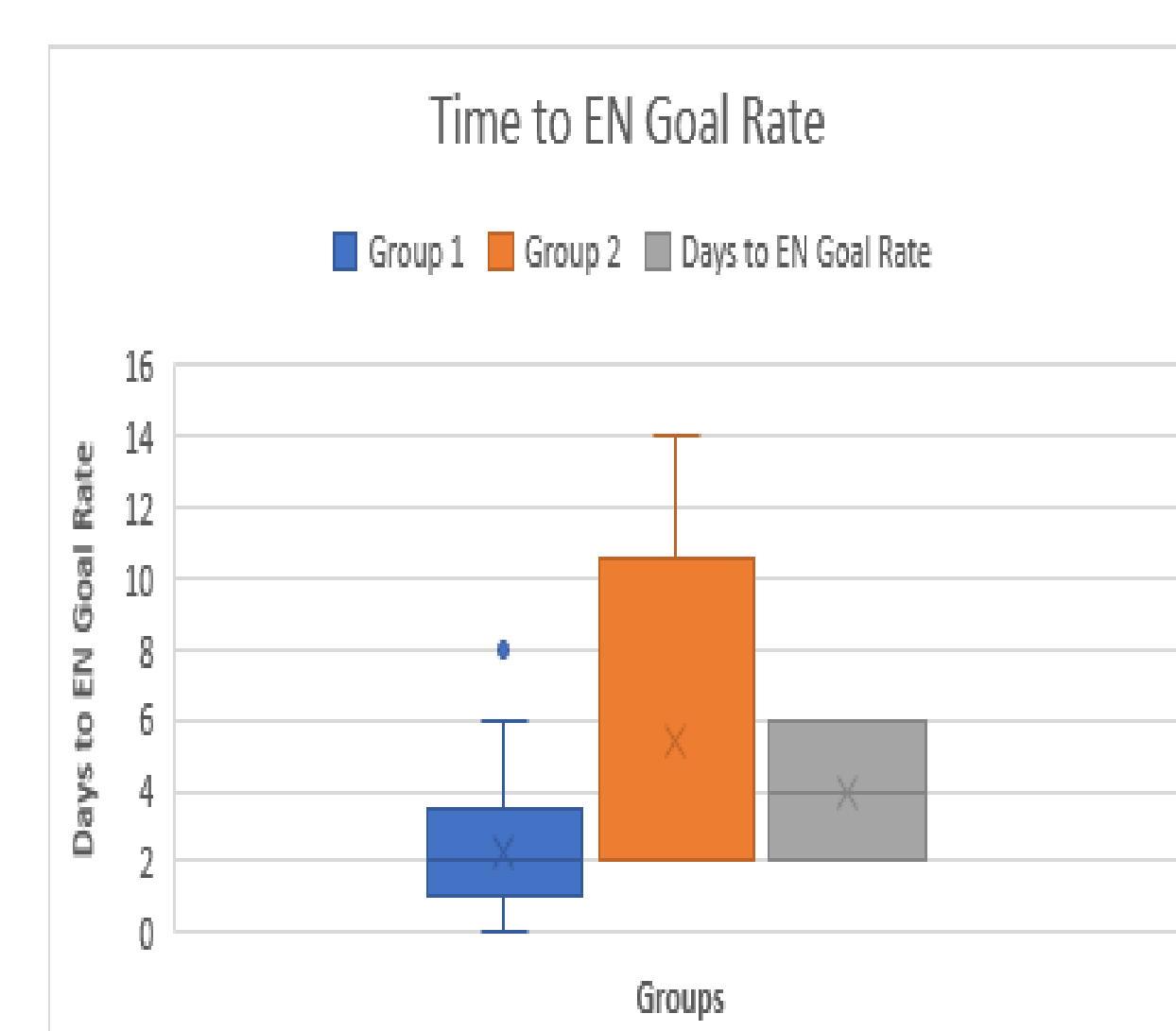


Figure 1. EN initiation and Length of Stay



Group 1 had EN initiated < 24 hours (n=25), Group 2 had EN initiated within 24 – 48 hours (n=5), and Group 3 had EN > 48 hours (n=2).

Figure 2. EN initiation and time to reach EN goal



Group 1 had EN initiated < 24 hours (n=25), Group 2 had EN initiated within 24 – 48 hours (n=5), and Group 3 had EN > 48 hours (n=2).

## RESULTS

Overall, the collected data included 32 patients (n=32) with 25 patients in group 1 who had EN initiated within 24 hours, 5 patients in group 2 within initiation in 24 to 48 hours and then 2 patients in group 3 with initiation beyond 48 hours. There were only a small number of patients (2/32, 6%) in group 3 who had EN initiated at 5 days and 7 days after admission. The smallest LOS was 3 days in group 1 and the longest LOS was in group 2 at 113 days. When analyzing the LOS between each group there is no statistically significant difference in whether EN was started within 24 hours or after ( $P=0.88$ ). Almost all patients (29/32, 91%) had a completed nutrition assessment done by a registered dietitian within 24 hours of admission to include an EN goal rate. When assessing the days, it took to get to the EN goal rate all patients in groups 2 and 3 took at least 2 days or more. In comparison, a majority in group 1 patients (13/25, 52%) reached the goal rate within 24 to 48 hours. Group 2 had the highest number of days it took to reach EN goal rate at 14 days. When analyzing the time it took to get to EN goal rate there was no statistically significant differences with whether patients received EN within 24 hours or after ( $P=0.07$ ).

## CONCLUSIONS

The findings suggest there are no statistically significant differences in LOS in burn care patients who receive early EN initiation within 24 hours compared to those receiving it after. Also, there are no statistically significant differences in the time it takes to reach EN goal rate with those receiving an early EN initiation within 24 hours compared to those receiving it after. There does seem to be some possible relation in early EN initiation improving adequate nutrition delivery ( $P=0.07$ ), but these results were not statistically significant. If starting EN early can help reach EN goal rate faster this can improve quicker wound healing and prevent the complications of organ dysfunctions, infections, and mortality. Overall, the project suggests there are no statistically significant differences in early EN initiation within 24 hours or beyond on LOS and time it take to reach EN goal rates.

## REFERENCES

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