

ABSTRACT

Comparison of Energy and Protein Adequacy between Closed and Open Enteral Nutrition System in Critically-Ill Adult Patients

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Introduction: Critically-ill patients are commonly fed with EN via open system (OS) or closed system (CS). Several studies showed that patients on CS had received greater volume of EN compared to OS. **Objective:** As there was no study conducted in Malaysia, hence this study is conducted to compare the energy and protein adequacy of both systems.

Methodology: This cohort prospective study was conducted in GICU (OS) and NICU/NHDW (CS) in Hospital Kuala Lumpur. Patients aged ≥ 18 years and fed by feeding pump in OS were included. Patients who were moribund or not given EN were excluded. Patients' demographic data and disease severity score were collected on day 1 in ICU and followed for 5 days until decease or discharge. Adequacy was determined by percentage of energy/protein received from requirements. **Results:** Fifty-five patients were included (25 OS and 30 CS) with mean aged 45.41 ± 17.46 years old, 78.2% male and 65.5% Malay. The mean SAPS II, SOFA score and ICU LOS were 46.47 ± 10.65 , 8.60 ± 3.64 and 9.24 ± 7.91 days respectively. The ICU mortality was 20%. EN was started about 2.56 ± 2.89 days after ICU admission and the mean adequacy of energy was $74.56 \pm 32.23\%$, while protein adequacy was $69.15 \pm 35.78\%$. Compared with the CS, OS were significantly older than CS (51 years old vs 42.5 years old; $p = 0.035$) and had a higher SOFA score (10 vs 7.5; $p = 0.014$). No difference in ICU LOS and mortality between group were found. Energy (45.64% vs 96.71% ; $p < 0.001$) and protein adequacy (38.78% vs 94.12% ; $p < 0.001$) were significantly

higher in the CS than the OS. **Conclusion:** CS as compared with OS may improve nutritional adequacy as CS delivered more 108% energy and 141% protein than OS. The difference in

adequacy might be attributed to these factors; feeding method used in the system, patients' characteristics and condition rather than the feeding system itself.