Prescription and delivery of nutrition support in critically ill children: do they meet nutritional needs?

Project: 483

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Introduction:

During hospitalization in a Paediatric Intensive Care Unit (PICU), critically ill children are usually not able to eat and require a nutritional support, most often provided by the enteral route. An optimal nutritional intake, especially energy and protein intakes are associated with a decreased risk of morbidity and mortality. However, difficulties in managing nutritional support may occur at different stages. Therefore, the objective of this study was to assess the adequacy of both prescription and administration of nutritional support in critically ill children.

Methods:

Critically ill children hospitalized for >24 hours in PICU and without oral nutritional intake at admission were included. The amount of energy and protein from nutritional support that were prescribed by physicians and delivered to children were recorded daily until the 10th day of hospitalization, discharge or death. Energy and protein needs were estimated with the Schofield equation and the A.S.P.E.N. guidelines, respectively. The energy and protein needs, prescriptions and delivery were compared by using the ratios: prescriptions/needs, prescriptions/delivery and delivery/needs. The number and duration of interruptions of nutritional support and their causes were also collected.

Results:

We included 199 children with a median length of PICU stay of 7 days [Interquartile Range IQR: 4-10]. Nutritional support was introduced in 88% of children, and within 18 hours [7-26] after admission. During the PICU stay, the prescription reached 95% (95% CI: 92%, 98%) of energy needs and only 61% [95% CI: 58%, 64%] of protein needs. The delivery of nutrition was high: 86% (95% CI: 84%, 88%) of the energy prescribed was delivered to children, and this ratio reached 97% (95% CI: 94, 101) for protein. Finally, children received 84% (95% CI: 80%, 87%) of their energy needs and only 58% (95% CI: 55, 61) of their protein needs. Significant differences were observed among age groups with the lowest ratios observed in older children. Nutritional support was interrupted in 70% of children for 6 hours [1-14]. Nursing/physiotherapy was the main reason for interrupting nutrition support, but extubation and medical procedures caused the longest interruptions.

Conclusion:

Despite an early introduction of enteral nutrition after PICU admission as recommended, the amount of protein prescribed to critically ill children was low during the entire stay in PICU and needs improvement, especially in older children. An enteral feeding enriched in protein may help to achieve higher protein intake. In contrast, the quality of the administration of nutrition support was good, with limited interruption of nutritional support.