

Water and sodium administration in the pediatric intensive care unit: the hidden role of “non-prescribed” fluids.

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Introduction. Fluid therapy, a cornerstone of medical treatment, is particularly important and challenging in critically ill children and should be considered, in all respects, as a pharmacological therapy.

Aims. Describe the current clinical practice regarding water and sodium administration in critically ill children and highlight the possible role of “non-prescribed” fluids, i.e. fluids administered as drug diluents and to provide patency of intravascular catheters.

Methods. Children admitted to the pediatric intensive care unit (PICU) between January and December 2017, aged <3 years who required at least 48 hours of invasive mechanical ventilation were retrospectively enrolled. Quantity, quality and indication of fluids administered intravenously or enterally, urinary output and data regarding fluid balance were recorded for the first 48 hours following intubation. The quantity of delivered sodium was calculated by multiplying sodium concentration and the amount of various fluids. Data are expressed as median and interquartile range or as percentage.

Results. Twenty-two patients (age 9 [3-17] months, weight 6.8 [4.7-9.0] kg) were studied. During the first 2 days after intubation, patients received an average daily total of 952 [784 - 1264] ml of water, i.e. 155 [130-180] ml/kg/day. The majority was due to enteral fluids (39%), followed by “non-prescribed” fluids (34%), maintenance (24%) blood components (2%) and resuscitation (1%) fluids (Figure 1). A daily dose of 97 [59 - 120] mEq of sodium, i.e. 13 [10-15] mEq/kg/day was administered. The majority of sodium derived from “non-prescribed” fluids (Figure 1). Cumulative fluid balance averaged 462 [130 - 851] ml, i.e. 87 [16 - 109] ml/kg.

Conclusions. “Non-prescribed” fluids are one of the major contributors of water and salt administration in the studied population of critically ill children.

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