

ESPS PEER REVIEW REPORT

Name of journal: World Journal of Critical Care Medicine

ESPS manuscript NO: 12649

Title: The impact of perioperative hyponatremia in children - a narrative review

Reviewer code: 02584466

Science editor: Xue-Mei Gong

Date sent for review: 2014-07-19 17:09

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CLASSIFICATION	LANGUAGE EVALUATION	RECOMMENDATION	CONCLUSION
<input type="checkbox"/> Grade A: Excellent	<input type="checkbox"/> Grade A: Priority publishing	Google Search:	<input type="checkbox"/> Accept
<input type="checkbox"/> Grade B: Very good	<input type="checkbox"/> Grade B: Minor language polishing	<input type="checkbox"/> Existing	<input type="checkbox"/> High priority for publication
<input type="checkbox"/> Grade C: Good	<input type="checkbox"/> Grade C: A great deal of language polishing	<input type="checkbox"/> No records	<input type="checkbox"/> Rejection
<input type="checkbox"/> Grade D: Fair	<input type="checkbox"/> Grade D: Rejected	<input type="checkbox"/> Existing	<input type="checkbox"/> Minor revision
<input type="checkbox"/> Grade E: Poor		<input type="checkbox"/> No records	<input type="checkbox"/> Major revision

COMMENTS TO AUTHORS

This manuscript addresses an important topic that should be brought to the attention of all medical professionals dealing with surgery in children. The organization and clarity of the report, however, will require extensive and careful revisions. I have the following suggestions: **MAJOR SUGGESTIONS** (A) Avoid repeating the same statements in the Abstract, Core Tip, and Discussion. Choose the appropriate section for these statements. (B) Attempt to be precise in every statement. The readers should not have to guess the meaning of various sentences. Example: Page 6 "However, there was a greater variation (in what?) among children with the most severe level of pre-operative hyponatremia" (C) The language of the manuscript needs intense revision by an expert. This will have the advantage of improving the clarity of many statements. **OTHER CRITICISMS** (a) What is a "basic" salt solution? (page 5, top). Provide its strength. (b) What are "large" and "very large" changes in serum sodium levels in the first few weeks of life? (Page 7, top). Provide ranges of these changes. (c) Change "...should have an osmolality close to the physiological range....(page 8, second paragraph) to "should have a sodium concentration...". It is important to dissociate in this instance between solutes that are metabolized rapidly and those that are not. For example, the osmolality of 5% glucose solution is close to the normal range. After it is metabolized, the children are left with a large water load. (d) Monitoring of the serum sodium concentration is critical for managing perioerative patients, indeed all patients who are maintained by fluid infusion. This should be stressed in the Discussion (e) Representative cancer types should be added to the



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Cancer row in Table 2. (f) I did not see any mention in the text of Table 3, which is very important.

ESPS PEER REVIEW REPORT

Name of journal: World Journal of Critical Care Medicine

ESPS manuscript NO: 12649

Title: The impact of perioperative hyponatremia in children - a narrative review

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CLASSIFICATION	LANGUAGE EVALUATION	RECOMMENDATION	CONCLUSION
<input type="checkbox"/> Grade A: Excellent	<input type="checkbox"/> Grade A: Priority publishing	Google Search:	<input type="checkbox"/> Accept
<input type="checkbox"/> Grade B: Very good	<input type="checkbox"/> Grade B: Minor language polishing	<input type="checkbox"/> Existing	<input type="checkbox"/> High priority for publication
<input type="checkbox"/> Grade C: Good	<input type="checkbox"/> Grade C: A great deal of language polishing	<input type="checkbox"/> No records	<input type="checkbox"/> Rejection
<input type="checkbox"/> Grade D: Fair	<input type="checkbox"/> Grade D: Rejected	BPG Search:	<input type="checkbox"/> Minor revision
<input type="checkbox"/> Grade E: Poor		<input type="checkbox"/> Existing	<input type="checkbox"/> Major revision
		<input type="checkbox"/> No records	

COMMENTS TO AUTHORS

I have a few suggestions for improving the manuscript. Most of these involve sentence structure, but one change is very important. The authors say that IV solutions should have the same osmolality as plasma. Instead, they should have said the same "tonicity" as plasma. 5% dextrose in water as the same osmolality as plasma but would be disastrous in a post-operative patient. My suggested changes are incorporated in the text: Abstract For more than 50 years, hypotonic fluids (crystalloids) have been the standard for maintenance fluid in children.. In the last decade, several studies have evaluated the risk of hyponatremia associated with the use of hypotonic versus isotonic fluids in children, leading to an intense debate. Children undergoing surgery have several risk factors for developing hyponatremia and the risk has been shown to be higher with hypotonic than with isotonic fluids . Symptoms of hyponatremic encephalopathy are non-specific and can include headache, nausea, vomiting and fatigue. These symptoms can easily be mistaken for non-specific symptoms caused by surgery and general anesthesia. Despite extensive studies on the risk of peri- and postoperative hyponatremia in children, the problem continues to be neglected in daily clinical practice, and hyponatremic encephalopathy continues to affect morbidity and mortality in hospitalized children. Early diagnosis and prompt treatment is essential to reduce morbidity and mortality. This complex problem deserves more attention from both academic and practicing clinicians as there is ample evidence showing that serious consequences for children can be avoided. Additionally, industry and researchers are urged to put more efforts into developing more

appropriate balanced intravenous solutions for children of different ages and different conditions. Key words: Hyponatremia; Perioperative; Children; Pediatric; Fluid Core tip In the last decade, several studies have evaluated the risk of hyponatremia associated with the use of hypotonic versus isotonic fluids in children, leading to an intense debate. Hyponatremia in children can lead to hyponatremic encephalopathy with a reported mortality of up to 8%. Early diagnosis and prompt treatment is essential to reduce morbidity and mortality. The risk of hyponatremia remains a clinical challenge deserving more attention by both academic and practicing clinicians. We review the literature and describes the impact of perioperative hyponatremia in children.

INTRODUCTION Preoperative fluid status in children is affected by various factors. The overall goal of perioperative fluid management is to ensure adequate perfusion of tissue by replacing the preoperative fluid deficit, administering maintenance fluid and replacing ongoing losses. Administering maintenance fluid including electrolytes and glucose and replacing preoperative fluid deficit is the standard of care. Preoperative fluid deficit is often due to prolonged fasting, dehydration (diarrhea, vomiting and fever), bleeding and increased level of stress. Consequently, inadequate fluid management may cause reduced cardiac output and oxygen delivery to damaged tissue, which is associated with more postoperative complications [1]. On the other hand, overhydration can have severe consequences such as acidosis, coagulation deficit and peripheral and pulmonary edema [2,3]. Children undergoing surgery are at higher risk of developing hyponatremia and accumulated evidence indicates that among children with a serum sodium < 125 mEq/l more than 50% may develop hyponatremic encephalopathy and hence are at risk of seizures, respiratory failure and ultimately death [4]. Correct perioperative fluid management is thus essential to avoid perioperative hyponatremia in children. In this narrative review, we will address the recent publications and evidence in regards to this important and often neglected clinical con