Reviewer’s report

Title: The impact of phosphate balanced crystalloid infusion on acid-base homeostasis (PALANCE study): study protocol for a randomized controlled trial

Version: 0 Date: 16 Mar 2017

Reviewer: Carmen Pfortmueller

Reviewer’s report:

I thank the authors for their valuable and interesting protocol. Though very interesting it has some flaws that should be addressed at latest once the results of this study are ready for publishing.

1. What is your definition of major abdominal surgery? 120 minutes is a very short duration for "major" surgery. Do these patients undergo laparotomy or do you also include patients with laparoscopic or transvaginal approaches? I am not sure if a procedure of less than 120 minutes can be called "major". You only include gynecological patients? What happens if the surgery is not terminated at the time point 120, does the study continue?

2. The amount of fluid (30ml/kg ideal body weight/h) you plan to infuse is extremely high! Fluid overload is associated with increased mortality and infectious complications; I would strongly suggest to either lower the amount of fluid infused or make a strong argument as to why such huge amounts are necessary.

3. Power calculation: You based your power calculation on a study using 4000ml/h. Was that study performed in an experimental setting? I can not imagine that in any OR 4000ml of fluids per hour of surgery are infused! Therefore I am not sure if this study can be used for power calculation as it obviously is not even near current clinical practice and even with 30ml/kg IBW/h of infusion you have far lower fluid volumes than with 4000ml/h for 2 hours. Maybe use your clinic’s data on Ionosteril instead of this study.

4. Even though the topic is scientifically very interesting, I am not sure of its clinical relevance. Additionally I think the issue of changes in acid-base homeostasis and the benefits of perioperative phosphate supplementation should be investigated separately.

Level of interest

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