FLUIDS IN THE MANAGEMENT OF SEPSIS IN CHILDREN: A REVIEW OF GUIDELINES IN THE AFTERMATH OF THE FEAST TRIAL

Juan Emmanuel Dewez,¹ Ruud Nijman,² Shunmay Yeung¹
1. London School of Hygiene and Tropical Medicine, London, United Kingdom 2. Imperial College NHS Healthcare Trust, London, United Kingdom (contact:shunmay.yeung@lshtm.ac.uk)

Introduction and Objective

A large randomised controlled trial conducted in African countries in 2011 (FEAST trial) showed that rapid fluid resuscitation in severely ill febrile children increased mortality by 3.3% (1). There has been some controversy around the implications of these results for the management of children with sepsis in high-income countries
We reviewed guidelines from Europe, the USA, and the WHO to compare recommendations regarding use of rapid fluid resuscitation in paediatric sepsis, and examine the impact of the FEAST trial on these recommendations.

Methods

We used a three-pronged approach of 1) database search (Medline, Embase, SIGN, G-I-N, and Trip), 2) European Paediatric Associations, and 3) consultation of an expert research network to identify guidelines (Figure 1).
Eligibility criteria: the most recent (after 2000) and nationally endorsed guideline from European Union or European Free Trade Area countries, the USA, the WHO and any relevant other international organization.

Figure 1. Search strategy

Results

Figure 2. Availability of paediatric sepsis guidelines in Europe

- 13 guidelines were identified, 10 were from Europe (Figure 2), 1 from the USA, 1 from WHO, and 1 from the Surviving Sepsis Campaign
- All guidelines recommended immediate administration of crystalloids or colloids (Table)
- Among those published after the FEAST trial, 4 discussed the results of the trial but only one (AHA-PALS, USA) recommended cautious administration of fluids in children with limited access to intensive care medicine, in line with the FEAST trial results
- Two guidelines recommend cautious administration of fluids for other reasons (NICE, UK and WHO)
- 6/13 guidelines recommended the use of blood gas and lactate to guide use of fluids boluses
- The total recommended volumes varied between 40 and 60 mL

(1) Maitland K, Kiguli S, Opoka RO, Engoru C, Olupot-Olupot P, Akech SO, et al. Mortality after fluid bolus in African children with severe infection. The New England journal of medicine. 2011;364(26):2483-95.

Published after/before FEAST trial	Country/ international organization Year	Recommendations		
		Immediate rapid fluids?	Exceptions?	Volume of initial bolus (mL/kg)
After	Surviving Sepsis Campaign 2017	Yes	No	20
	Denmark 2016	Yes	No	20
	UK 2016	Yes	Cardiac or kidney diseases	20
	Germany 2015	Yes	No	20
	USA 2015	Yes	No access to intensive care	20
	Poland 2014	Yes	No	Not specified
	Ireland 2014	Yes	No	20
	WHO 2013	Yes	Malnutrition Malaria Anaemia	20
	Norway 2013	Yes	No	20
Before	Portugal 2012	Yes	No	10
	Malta 2010	Yes	No	20
	Spain 2009	Yes	No	20
	France 2006	Yes	No	Not specified

Table. Summary of included guidelines

Conclusion

The FEAST trial’s results have not generally been incorporated in guidelines from high-income countries. The WHO guideline, which targets mainly children with limited access to intensive care, did not mention the results of the trial.
Clinicians in high-income settings require further evidence to inform any modifications in current fluid resuscitation guidelines.