

Fluid Choice and Blood Products

Early fluid administration is more important than type of fluid¹⁻³

Fluids	Bolus amount	Considerations	Cautions	Refs
Noraml saline	20-30 mL/kg	First line		1
Lactated ringers	20-30 mL/kg	Alternative first line	Risk of increased ICP (slightly hypotonic)and microthromboses (Ca ²⁺ can activate clotting cascade) Avoid/use with caution if hyperkalemia, AKI, or known kidney disease	7, 8
5% albumin (> 44 wks CGA)	10-20 mL/kg	Consider if: Poor response to crystalloid 60 mL/kg Albumin < 3 mg/dL Chloride > 110 mEq/L		4, 5, 6

Blood products

Fluids	Considerations	Cautions	Refs
PRBC	Consider if: Hgb < 10 and ongoing shock with sScvO2 < 70%, lactate > 4 mmol/dL Patients not in shock may tolerate lower Hgb (target=7 gm/dL)	Monitor for anaphylaxis	1, 2, 12
FFP	Consider if: Invasive procedure and INR/PTT elevated or DIC with active bleeding		1, 10
Platelets	Consider if: Platelet < 10 k or Platelet < 50 K with bleeding, invasive procedure or ARDS	Recommend to administer over at least 30 minutes. Do not push platelets for volume resuscitation due to risk of hypotension	1, 10, 11

References for fluid resuscitation

1. Dellinger et al, CCM, 2008 (Surviving Sepsis Campaign)
2. Rivers et al, NEJM, 2001
3. Han et al, Pediatrics, 2003
4. Vincent & Gottin, Minerva Anesthesiol, 2011
5. Finfer et al, NEJM, 2004 (SAFE Study)
6. Dubois et al, CCM, 2006
7. Tommasino et al, CCM, 1988
8. Kiraly et al, J Trauma, 2006
9. Hartog et al, Anesth Analg, 2011
10. Gajic et al, CCM, 2006
11. Church et al, PCCM, 2009

- 12. Karam, PCCM, 2011
- 13. Carcillo et al, JAMA, 1991

Fluid choices: Adverse affects and cost

Agent	Potential adverse effects	Cost
Normal saline	Hyperchloremic metabolic acidosis	\$
Lactated ringers	Metabolic alkalosis, hyperkalemia, increased ICP, microthrombosis	\$
Albumin 5%	Allergic reactions, intraventricular hemorrhage (neonates)	\$\$\$\$

Courtesy of CM Pharmacy Department

Reconceptualized from: <http://www.chop.edu/clinical-pathway/icu-clinical-pathway-infants-28-days-and-children-severe-sepsisseptic-shock-fluid-0>

These guidelines do not establish a standard of care to be followed in every case. It is recognized that each case is different and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time. It is impossible to anticipate all possible situations that may exist and to prepare guidelines for each. Accordingly these guidelines should guide care with the understanding that departures from them may be required at times.