

## Fluids for Sepsis

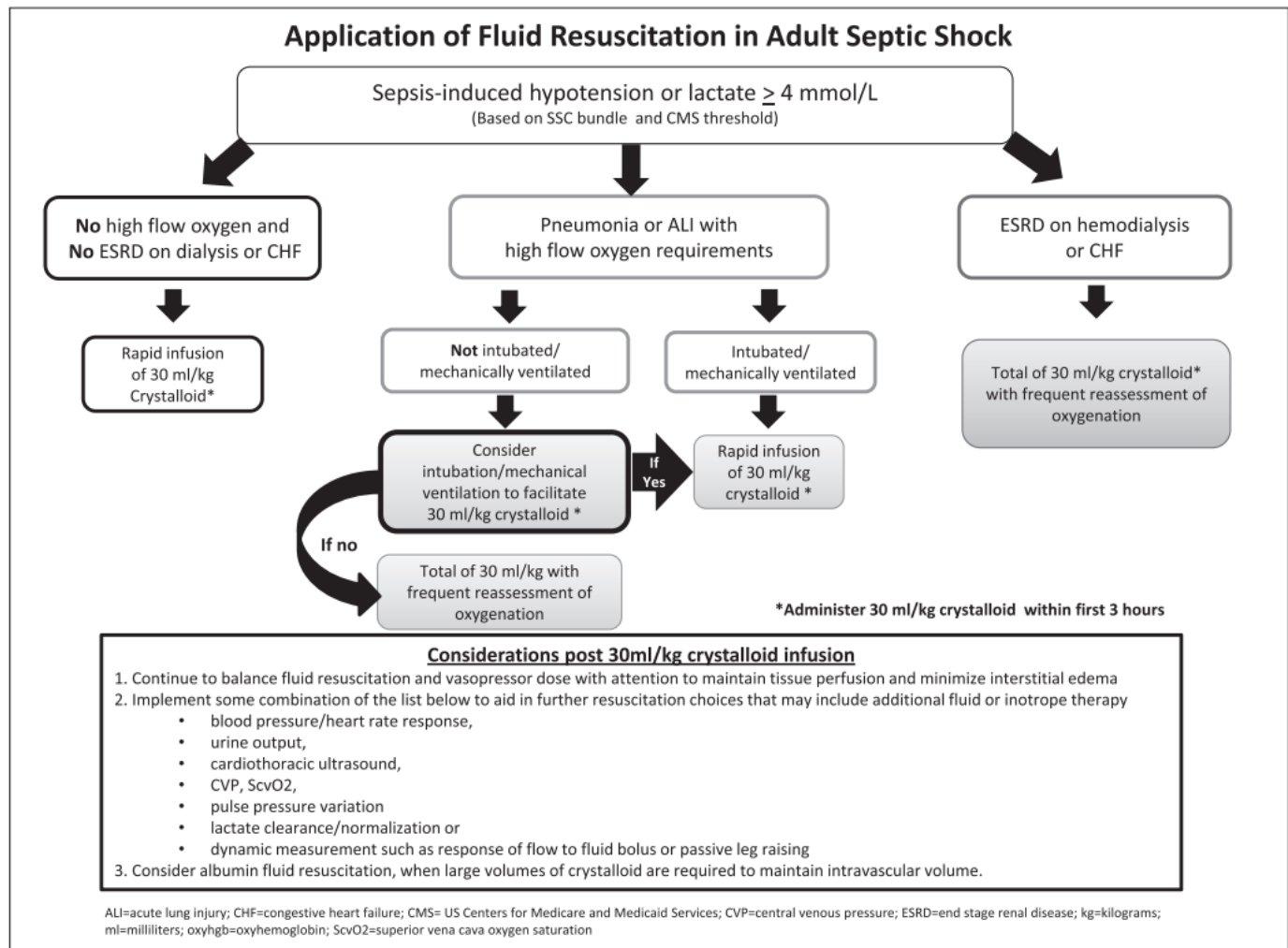
*Guidance from the Surviving Sepsis Campaign 2016*

- The recommendation, for the initial fluid resuscitation from sepsis-induced hypoperfusion, is to infuse at least 30 mL/kg of intravenous crystalloid fluid within the first three hours.
- Fluids should be administered for hypotension, lactate  $\geq 4$  mmol/L or septic shock.
- The recommendation is to provide initial fluid resuscitation rapidly; do not infuse using an IV pump.
  - For example, give 1-liter IV fluid over 15 minutes using a pressure bag.
- More rapid administration and greater amounts of fluid may be needed in patients with sepsis-induced tissue hypoperfusion.
- Administration of 30 mL/kg crystalloid fluids is recommended in patients with end-stage renal disease on dialysis or chronic heart failure with frequent assessment of patient's oxygenation status.
- Additional fluids should be guided by frequent reassessment of hemodynamic status. See also [Optimizing Fluid Management in Sepsis Patients](#).
- Recommended measurements include MAP, BP, HR, urine output, capillary refill, cardiac ultrasound, ScvO<sub>2</sub>, lactate clearance.
- Dynamic pressure measurements such as pulse pressure variation and stroke volume variation are recommended to evaluate fluid responsiveness in patients with sepsis.
- Traditional hemodynamic measurements such as CVP or PAOP are no longer recommended due to their static nature (measure only a point in time) and their inability to predict fluid responsiveness.
- Recommended resuscitation end-points are:
  - MAP > 65 mmHg
  - Normalization of the lactate
  - Dynamic measurement indicates patient is no longer fluid responsive

### Key articles:

- **Early Liberal Fluid Therapy for Sepsis Patients is Not Harmful: Hydrophobia Is Unwarranted but Drink Responsibly.** (2016). *Critical Care Medicine*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5113226/>
- **Fluid Resuscitation and Clinical Outcomes in Patients with Known Heart Failure Who Develop Severe Sepsis or Septic Shock.** (2016). *CHEST*. <https://doi.org/10.1016/j.chest.2016.08.363>
- **Increased Fluid Administration in the First Three Hours of Sepsis Resuscitation Is Associated With Reduced Mortality: A Retrospective Cohort Study.** (2014). *CHEST*. <https://doi.org/10.1378/chest/13-2702>
- **Volume of Fluids Administered During Resuscitation for Severe Sepsis and Septic Shock and the Development of the Acute Respiratory Distress Syndrome.** (2014). *Journal of Critical Care*. <http://dx.doi.org/10.1016/j.jcrc.2014.06.005>

The diagram below explores the nuancing of initial administration of 30 mL/kg crystalloid for sepsis-induced hypoperfusion based on patient characteristics. It also draws attention to reassessment tools following the initial dose as an influence on further fluid administration or inotropic therapy (Dellinger, 2017, open access).



## References

- Rhodes, A., Evans, L. E., Alhazzani, W., Levy, M. M., Antonelli, M., Ferrer, R., . . . Dellinger, R. P. (2017). Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016. *Critical Care Medicine*, 45(3), 486-552. <https://doi.org/10.1097/CCM.0000000000002255>
- Dellinger, R. P., Schorr, C. A., & Levy, M. M. (2017). A User's Guide to the 2016 Surviving Sepsis Guidelines. *Critical Care Medicine*, 45(3), 381-385. <https://doi.org/10.1097/CCM/0000000000002257>