

Weigh Pros and Cons of Balanced IV Fluids in the ICU

Continuing IV fluid shortages are highlighting questions about **best fluid choices for resuscitating critically ill patients**.

Help unravel differences between common isotonic crystalloids...normal saline (NS), lactated Ringer's (LR), etc...in the ICU.

Differentiate crystalloid options. For instance, too much chloride from NS can cause acidosis...renal vasoconstriction...and kidney injury.

On the other hand, isotonic "balanced fluids" (LR, Normosol-R, Plasma-Lyte A, etc) limit these risks. They get their name because they contain less chloride...and have a closer makeup to actual blood plasma.

Point out that balanced fluids have extra ingredients. For example, they include buffers (lactate, acetate, etc) that are metabolized to alkaline bicarbonate to counteract acidosis.

Be aware that these "extras" can also impact compatibility with other IV meds. For example, calcium in LR precipitates with ceftriaxone.

Compare differences between NS and balanced fluids using our chart.

Account for costs and patient conditions. For example, LR, Normosol-R, and NS are less expensive (\$5/L) compared to Plasma-Lyte A (\$15/L).

Lean toward balanced fluid boluses for sepsis. They're suggested by the latest sepsis guidelines...and patients given LR may have lower renal injury risks compared to NS.

Also suggest balanced fluids over NS for acute pancreatitis. Evidence shows LR may reduce pancreatitis severity...but length of stay and mortality outcomes are mixed.

Consider using either balanced fluids OR NS for initial boluses in diabetic ketoacidosis. Share that observational studies suggest LR normalizes blood pH faster and is associated with shorter length of stay compared to NS.

But steer toward NS for traumatic brain injury...a recent meta-analysis linked LR to increased mortality. It's possible LR's lower sodium content might lead to hyponatremia that worsens brain edema.

Use our IV Fluid Safety chart to learn more about product differences and error prevention...and for answers to FAQs.

Key References:

- Evans L, Rhodes A, Alhazzani W, et al. Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock 2021. Crit Care Med. 2021 Nov 1;49(11):e1063-e1143.
- Umpierrez GE, Davis GM, ElSayed NA, et al. Hyperglycemic Crises in Adults With Diabetes: A Consensus Report. Diabetes Care. 2024 Aug 1;47(8):1257-1275.
- Tenner S, Vege SS, Sheth SG, et al. American College of Gastroenterology Guidelines: Management of Acute Pancreatitis. Am J Gastroenterol. 2024 Mar 1;119(3):419-437.
- Diz JC, Luna-Rojas P, Díaz-Vidal P, et al. Effect of Treatment With Balanced Crystalloids Versus Normal Saline on the Mortality of Critically Ill Patients With and Without Traumatic Brain Injury: A Systematic Review and Meta-Analysis. Anesth Analg. 2025 Jan 20. doi: 10.1213/ANE.0000000000007368.
- Medication pricing by Elsevier, accessed April 2025.

Hospital Pharmacist's Letter. May 2025, No. 410525

Cite this document as follows: Article, Weigh Pros and Cons of Balanced IV Fluids in the ICU, Hospital Pharmacist's Letter, May 2025

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