It seems likely that normal saline will eventually be abandoned in favor of safer, more physiologic crystalloid solutions in the coming years" Blumberg et al (2018).

Abstract:

Crystalloid infusion is widely employed in patient care for volume replacement and resuscitation. In the United States the crystalloid of choice is often normal saline. Surgeons and anesthesiologists have long preferred buffered solutions such as Ringer's Lactate and Plasma-Lyte A. Normal saline is the solution most widely employed in medical and pediatric care, as well as in hematology and transfusion medicine. However, there is growing concern that normal saline is more toxic than balanced, buffered crystalloids such as Plasma-Lyte and Lactated Ringer's. Normal saline is the only solution recommended for red cell washing, administration and salvage in the USA, but Plasma-Lyte A is also FDA approved for these purposes. Lactated Ringer's has been traditionally avoided in these applications due to concerns over clotting, but existing research suggests this is not likely a problem. In animal models and clinical studies in various settings, normal saline can cause metabolic acidosis, vascular and renal function changes, as well as abdominal pain in comparison with balanced crystalloids. The one extant randomized trial suggests that in very small volumes (2 l or less) normal saline is not more toxic than other crystalloids. Recent evidence suggests that normal saline causes substantially more in vitro hemolysis than Plasma-Lyte A and similar solutions during short term storage (24 hours) after washing or intraoperative salvage. There are now abundant data to raise concerns as to whether normal saline is the safest replacement

solution in infusion therapy, red cell washing and salvage, apheresis and similar uses. In the USA, Plasma-Lyte A is also FDA approved for use with blood components and is likely a safer solution for these purposes. Its only disadvantage is a higher cost. Additional studies of the safety of normal saline for virtually all current clinical uses are needed. It seems likely that normal saline will eventually be abandoned in favor of safer, more physiologic crystalloid solutions in the coming years.

Reference:

Blumberg, N., Cholette, J.M., Pietropaoli, A.P., Phipps, R., Spinelli, S.L., Eaton, M.P., Noronha, S.A., Seghatchian, J., Heal, J.M. and Refaai, M.A. (2018) 0.9% NaCl (Normal Saline) – Perhaps not so normal after all? Transfusion and Apheresis Science. February 21st. .

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